National Library of Canada
Acquisitions and Bibliographic Services Branch
395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale du Canada
Direction des acquisitions et des services bibliographiques
395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Canada

UNIVERSITY OF ALBERTA

RESEARCH ASSIGNMENTS, THE INFORMATION SEARCH PROCESS AND RESOURCE USE IN A HIGH SCHOOL: A CASE STUDY

BY

RAE HAZELWOOD

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF LIBRARY AND INFORMATION STUDIES

SCHOOL OF LIBRARY AND INFORMATION STUDIES

EDMONTON, ALBERTA

FALL, 1994

National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-94992-9

Canada

Rae Hazelwood
4022 Nipigon Road South
Lethbridge, AB
T1K 3Y3
Canada

Rae Hazelwood:

I hereby grant you permission to include a copy of the Model of the Information Search Process, taken from page 43 of Seeking Meaning: A Process Approach to Library and Information Services, in your thesis.

Credit and acknowledgment for the use of the Model of the Information Search Process will be shown at the bottom of the page on which it appears as follows:

> Copied with permission, from Seeking Meaning: A Process Approach to Library and Information Services, p 43; Copyright 1993 by Dr. Carol C. Kuhlthau.

Yours truly,

Carol C. Kuhlthau

Dr. Carol C. Kuhlthau, Associate Professor
School of Communication, Information, and Library Studies
Rutgers, The State University of New York
4 Huntington Street
New Brunswick, NJ 08903
USA

5/31/94
Date

Rae Hazelwood
10533-74 Avenue
Edmonton, AB
T6E 5M9
Canada

Rae Hazelwood:

I hereby grant you permission to use and adapt any of the data collection instruments as described in the appendices of my doctoral dissertation "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach."

Credit and acknowledgment for the use of the data collection instruments will be acknowledged on each form as follows:

> Adapted, by permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," Appendix A, p ___. Copyright 1978 by Jacqueline Cooper Mancall.

I also understand that a copy of your thesis report will be mailed to me upon completion of your research.

Yours truly,

Jacqueline J. Mancall

Dr. Jacqueline Mancall
College of Information Studies
Drexel University
32nd & Chestnut Streets
Philadelphia, PA 19104
USA

5/5/83
Date

Rae Hazelwood
11475-48 Avenue
Edmonton, AB
T6H 0C9

Rae Hazelwood:

I hereby grant you permission to use and adapt any of the data collection instruments as described in the appendices of my master's thesis "Patterns of Grade Ten Student Information Seeking Behaviour."

Credit and acknowledgment for the use of the data collection instruments will be acknowledged on each form as follows:

> Adapted, by permission, from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Appendix _, p ___. Copyright 1986 by Barbara A. Hall.

I also understand that a copy of your thesis report will be mailed to me upon completion of your research.

Yours truly,

B. A. Hall

Barbara A. Hall
6405 Cornell Place
Prince George, BC
V2N 2N7

Nov. 1/93
Date

I hereby grant Rae Hazelwood permission to include a copy of the English 13 class research assignment in the appendix of her master's thesis.

Credit and acknowledgment for the use of the assignment will be acknowledged as follows:

> Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

Robert Price
(Teacher)

Gloria Hodgetts
(Teacher-Librarian)

93/04/15
(Date)

I hereby grant Rae Hazelwood permission to include a copy of the Social Studies 20 class research assignment in the appendix of her master's thesis.

Credit and acknowledgment for the use of the assignment will be acknowledged as follows:

> Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

[signature]
(Teacher)

Gloria Hodgetts
(Teacher-Librarian)

93/06/17
(Date)

I hereby grant Rae Hazelwood permission to include a copy of the English 10AC class research assignment in the appendix of her master's thesis.

Credit and acknowledgment for the use of the assignment will be acknowledged as follows:

> Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

(Teacher)

(Teacher-Librarian)

93/06/10
(Date)

A.A. 20

I hereby grant Rae Hazelwood permission to include a copy of the ~~English 13~~ class research assignment in the appendix of her master's thesis.

Credit and acknowledgment for the use of the assignment will be acknowledged as follows:

> Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

[signature]
(Teacher)

[signature]
(Teacher-Librarian)

93/04/07
(Date)

I hereby grant Rae Hazelwood permission to include a copy of the English 10 class research assignment in the appendix of her master's thesis.

Credit and acknowledgment for the use of the assignment will be acknowledged as follows:

> Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

Olivia McCrae
(Teacher)

G. Hodgetts
(Teacher-Librarian)

93/06/10
(Date)

I hereby grant Rae Hazelwood permission to include a copy of the Biology 20 class research assignment in the appendix of her master's thesis.

Credit and acknowledgment for the use of the assignment will be acknowledged as follows:

> Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

L M Larson
(Teacher)

Gloria Hodgetts
(Teacher-Librarian)

93/06/11
(Date)

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR:	Rae Hazelwood
TITLE OF THESIS:	Research Assignments, the Information Search Process, and Resource Use in a High School: A Case Study
DEGREE:	Master of Library and Information Studies
YEAR THIS DEGREE GRANTED:	1994

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research purposes only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.

Rae Hazelwood

RAE HAZELWOOD
4022 Nipigon Road South
Lethbridge, AB
T1K 3Y3

Date: July 8 1994

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled "Research Assignments, the Information Search Process and Resource Use in a High School: A Case Study" submitted by Rae Hazelwood in partial fulfilment of the requirements for the degree of Master of Library and Information Studies.

Dr. A. Altmann, Co-Supervisor

Dr. D. Oberg, Co-Supervisor

Dr. A. Schrader

Dr. M. Iveson

94/07/05
Date

ABSTRACT

This case study describes how students in an urban Alberta high school used information resources to complete curriculum-based research assignments. The study also examines how teachers and a teacher-librarian, in a school that actively supported the Focus on Research Model (Alberta Education 1990a), worked together to develop and implement those assignments. The study focused on six student research assignments conducted in eleven classes in three subjects. Data were collected from relevant documents, field observations, student and teacher questionnaires, teacher and teacher-librarian interviews, and student bibliographies.

The study suggested that there is no direct relationship between policy development and student learning. Implementation of the Focus Model appeared to have been hampered by the lack of a mandate and of support for the change process. Students' use of information search strategies and resources was influenced by the nature of the assignments, the roles of the teaching staff, and the underlying philosophies of learning and teaching. There did not appear to be any relationship between the types of information search strategies and the kinds of resources used by students. The information searches of the students tended to be source and product-oriented with relatively little emphasis on process. Most of the materials cited were from the school library. The information cited in the bibliographies was taken from a small number of sources, generally in print format, and of a relatively current nature. Students did not use libraries independently. Most students reported receiving assistance, most often in the school library, during their information searches.

Implications for practice included the importance of an adoption stage in implementation of the Focus Model, the importance of a knowledgable, committed school-wide instructional team, and the significance of mediation and the school library in students' search processes and use of resources. Further research is suggested in the following areas: the roles of mediation and student collaboration in the search process and information use, the identification of the elements of the Focus Model that are essential to process-based information use, and the relationships between information resources searched and information resources cited in student bibliographies.

ACKNOWLEDGMENTS

So many people supported and assisted me in the completion of this research project. First, I wish to express special thanks to my Co-Supervisors, Dr. Dianne Oberg and Dr. Anna Altmann. They provided the intellectual guidance and the direction that allowed me to learn and grow in an area of study that continues to fascinate me. They also pushed, pulled, and prodded me over the bumpy spots. I consider myself fortunate to have had the opportunity to work with two such capable mentors.

I wish to thank all of the people who participated in the study: the students, the teachers, and the Teacher-Librarian. Without their cooperation and willingness to share their experiences, this project would not have been possible. The Teacher-Librarian played a crucial role as a liaison in the study. I appreciated the time, experience, and expertise that the Teacher-Librarian enthusiastically contributed to the study.

Faculty and classmates in the School of Library and Information Studies assisted me in many different ways. The Director of the School, Dr. Bertram, ensured that the entire process, from proposal presentation to thesis defense, ran as smoothly as possible. Dr. Schrader and Professor Olson provided assistance in planning and methodology. Most important, all of the faculty and my classmates continually encouraged me as I worked on the project.

I also wish to acknowledge the support for the research that I received in the form of scholarships and grants from the Province of Alberta and the Canadian Library Association. Thank you to Dr. Inskip for her assistance in preparation of scholarship applications.

Final thanks must go to my family. A large project such as a thesis places extra demands on all family members, not just the student. Mike contributed many hours of work in transcription and computer graphics. Kim, Patrick, and Sheila provided constant encouragement. My husband Jack continued to believe in me and my work even on the days when I did not. How could I not succeed when I had such great team support!

TABLE OF CONTENTS

CHAPTER ONE: NATURE OF THE STUDY 1

I. Introduction 1

II. The Focus Model and Information Resource Use 1

III. Background of the Study 3

IV. Statement of the Problem 5

V. Definition of Terms 6

VI. Delimitations of the Study 7

VII. Limitations of the Study 7

VIII. Significance of the Study 8

IX. Organization of the Report 9

CHAPTER TWO: REVIEW OF THE LITERATURE 10

I. Introduction 10

II. Evolution of School Library Programs 11

III. The Teaching of Library and Information Skills 12

IV. The Information Search Process 13

V. Information Resource Use by Students 19

CHAPTER THREE: DESIGN OF THE STUDY 25

I. Philosophical Orientation 25

II. The Case Study Research Methodology 26

III. Selection of the Research Site 28

IV. Data Collection 29

A. Types of Data 29
1. The Interviews 29
2. The Questionnaires 30
3. The Bibliography Sheets 30

B. Role of the Participants 31

V. Data Analysis 32

VI. Ethical Issues 33

A. Role of the Researcher 33

B. Rights of the Participants 34

VII. Establishing Trustworthiness 35

CHAPTER FOUR: CASE DESCRIPTION 37

I. The School 37

II. The Library 39

A. The Physical Plant 39
B. The Staff 40
C. The Collection 40
D. The Mission Statement 41
E. Goals of the Library 41
F. Collection Development Policy 41
G. Selection Policy 42
H. Library Programs and Activities 43

III. The Research Assignments 45

A. Student Research Assignment 1 45
B. Student Research Assignment 2 47
C. Student Research Assignment 3 50
D. Student Research Assignment 4 53
E. Student Research Assignment 5 56
F. Student Research Assignment 6 59

CHAPTER FIVE: FINDINGS AND ANALYSIS 63

I. Introduction 63

II. Findings: Relationship Between Goals of Education and the Information Search Process 64

III. Findings: Relationship Between the Development and Implementation of the Research Assignments and the Information Search Process 69

A. Time Frame of Student Assignments 70
B. Roles of the Teaching Staff and Administration 72
C. Design of the Student Assignments 77
1. Objectives 77
2. Structure 78
3. Teacher Expectations Regarding Resource Use by Students 81
D. Philosophy of Learning 82

IV. Findings: Description of How Students Use Information Resources 84

A. Information Sources 85
1. Number and Types of Libraries 85
2. Number and Types of Non-Library/Non-Traditional Sources of Information 88
3. Format of Materials Cited in Bibliographies 89
4. Number of References Listed in Student Bibliographies 90
5. Currency of References Listed in Student Bibliographies 91
B. Mediation in Student Information Searches 92

V. Findings: Comparison of Findings with Previous Resource Use Studies 94

VI. Summary: Key Factors in the Information Search Process and Resource Use 98

A. Role of the Teacher 98
B. Role of Mediators 98
C. Role of the School Library 99
D. Role of the Focus Model as a Search Strategy 99
E. Relationship Between the Information Search Process and Resource Use 100

CHAPTER SIX: CONCLUSIONS, IMPLICATIONS, AND QUESTIONS 112

I. Introduction 112

II. Summary of Findings 113

A. The Mission, Goals, Objectives, and Policy Statements of the Education Infrastructure 113
B. The Development and Implementation of Curriculum-Based Research Assignments 114
1. Time Frame 114
2. Roles of the Teaching Staff and Administration 114
3. Design of the Student Assignments 115
4. Philosophy of Learning 115
C. Student Use of School Library Information Resources 115
D. Student Use of Information Resources Outside of the School Library 116
E. Information Resources Cited in the Bibliographies 117

III. Implications 117

A. Implications for Practice 118
1. Relationship between the development of policy, the adoption of policy, and the implementation of policy 118
2. Importance of a school-wide team approach for the teaching of the research process and resource use 118
3. The role of mediation in the research process and resource use 120
4. The role of the school library 121
5. The relationship between information use and format of materials from which the information is taken 122
B. Implications for Research 123
1. Role of mediation in the information search process and in resource use in the school library 123

2. Role of collaboration in the information search process and resource use 124
3. Interpretation and implementation of the Focus Model 124
4. Relationship between the stages of the Focus Model and information resources being used in each stage 126
5. Relationship between information resources searched and information sources cited in bibliographies 126

IV. Issues of Trustworthiness: Questions for Consideration 127

A. The effect of the size of the student sample on the validity of conclusions and implications 127
B. The effect of the researcher as primary data gatherer and interpreter of data 128
C. The effect of the researcher's presence on the participants in the study 129
D. Degree of generalizability of the conclusions and implications of the study 129

V. Conclusion: Two Steps Forward and One Step Not Taken 130

BIBLIOGRAPHY 132

APPENDIX A: CONSENT FORMS AND DATA COLLECTION INSTRUMENTS 139

I. Sample Letter and Consent Form 139

A. Letter to Parents 139
B. Parental Consent and Student Assent Form 140

II. Data Collection Instruments 141

A. Student Questionnaire 141
B. Bibliography Sheets 147
C. Teacher Questionnaire 151
D. Teacher Interview 155
E. Teacher-Librarian Interviews 159

APPENDIX B: THE SCHOOL LIBRARY COLLECTION 168

APPENDIX C: STUDENT ASSIGNMENTS 170

I. Assignment 1 (Teacher R) - English 13 170

II. Assignment 2 (Teacher S) - English 10 171

III. Assignment 3 (Teacher T) - English 10 AC (Academic Challenge) 178

IV. Assignment 4 (Teacher W) - Social Studies 20 181

V. Assignment 5 (Teacher X) - Social Studies 20 187

VI. Assignment 6 (Teacher Y) - Biology 20 188

LIST OF TABLES

Table		Page
4.1	Student Research Assignments	62
5.1	Student Participation Rates in the Study	102
5.2	Number of Libraries Consulted by Students, Analyzed by Grade	103
5.3	Types of Libraries Consulted by Students, Analyzed by Subject	104
5.4	Library Sources of References Listed in Student Bibliographies, Analyzed by Subject	105
5.5	Types of Non-Library Information Sources Consulted by Students, Analyzed by Subject	106
5.6	Types of Materials Cited in Student Bibliographies, Analyzed by Subject	107
5.7	Frequency Distribution of References Listed in Student Bibliographies, Analyzed by Grade	108
5.8	Age of Materials Cited in Student Bibliographies, Analyzed by Subject	109
5.9	Types of Assistance Received by Students in Libraries, Analyzed by Grade	110
5.10	In-House Assistance Received by Students, Analyzed by Subject	111

LIST OF FIGURES

Figure Page

2.1 Model of the Information Search Process 24

Chapter 1

NATURE OF THE STUDY

I. Introduction

Today's students live in an information-oriented environment. Their information-seeking behaviours and patterns are constantly being shaped and directed by a wide variety of influences, many of them at an unconscious and informal level. Alberta Education has recognized the need for assisting students in the development of the ability to deal effectively with this proliferation of information. As a direct result of the recognition of this need, Alberta Education published Focus on Research (1990a), a handbook that describes a resource-based, process-oriented model for library research. It aims to help students to manage information efficiently and effectively and, more importantly, to develop transferable skills and strategies that will make learning a lifelong process. More than three years have passed since the Focus Model was introduced. While many Alberta schools appear to be still in the adoption stage, some schools, especially in the urban centres, have made a concentrated effort to implement the Model, usually through proactive school library programs. To date, there has been little research on the impact that the implementation of the Model has had on the information-seeking patterns of Alberta students (Loerke 1992).

II. The Focus Model and Information Resource Use

The Focus on Research Model is a process-oriented model for learning activities that "require access to an adequate quantity and variety of appropriate, up-to-date print and non-print resources from the school library, other libraries, the community and other sources" (Alberta Education 1990a, 10). There is a deliberate attempt in the Model to move from source-based and pathfinder-based information gathering to process-based library research (Eisenberg and Brown 1990). According to Kuhlthau (1993b), the source approach focuses on helping students to use a particular library, usually the school library, and its resources by improving location skills. The pathfinder approach is designed to assist students in locating relevant information in a logical sequence of

sources, usually progressing from general to more specific in nature, within a library or series of libraries. The aim is to help students understand the relationship among the sources. Kuhlthau suggests that both the source and pathfinder approaches are limited to specific situations and lack the potential for teaching learning strategies that can be transferred to other situations because learning from information is not treated as a constructive process. The earlier approaches do not emphasize the development of problem solving techniques, the evaluation of sources, or the analysis of personal information needs.

The Focus on Research Model emphasizes the importance of the information-seeking process over that of the product. What students need today are research skills to shape their search for answers. A systematic approach to the development of the required skills will prepare students for independent problem solving and lifelong learning. The Model aims to develop independent information problem solving strategies that are not anchored to a particular collection, type of library, or information source.

> The key idea is to teach a process that can be transferred to any research situation. (Alberta Education 1990a, 9)

The Alberta Education document does not address the question of how the adoption of a process-based research model might influence collection use and the need for subsequent changes in collection development and selection policy. If the new Model, with its emphasis on process, is successfully implemented, then there may be some marked changes in both resource and facility use. Kuhlthau (1993b) suggests that the process approach will require services that help students relate new information to what they already know and then to extend their information base to develop new understandings.

> What sets a good library off from other sources of documentary material is its provision not merely of simple summaries for shallow interests but of a complex array of sources from which the individual can piece together for himself what may never yet have been explicitly summarized. (Wilson 1977, 98)

The Focus Model directly addresses the limitations of the more traditional research strategies identified by Drott, Mancall, Barber, and Robinson (1980). For example, Drott, Mancall, Barber, and Robinson (1980) concluded that students chose

only materials in the familiar monograph format, and that they needed to be taught how to use the best, most current materials available.

> Training may be needed to assist students in achieving a subject, rather than a format, approach. (Drott, Mancall, Barber, and Robinson 1980, 6)

In a study of online bibliographic searching and student use of information, Wozny (1982) reached much the same conclusion. She suggested that students must understand that information is available in many different formats and locations. She identified a tendency of students to place more importance on information obtained from familiar formats, particularly information in print form, and from traditional information sources like school and public libraries.

If resource use by students does change, then collection development policies within the school library may also need to be changed. For example, if the research instruction is changing from source-based to process-based, any format biases in instruction and in the collection will need to be recognized and eliminated. If the information-seeking process is not bounded by the walls of the school library, then cooperative liaisons between complementary information-providing institutions may need to be designed and promoted. Within this new Model, the whole role of the school library changes from that of being the depository of all information necessary to the student to that of being the gateway or facilitator of the information-seeking process.

III. Background of the Study

In the early 1980s, major educational stakeholders in the Province believed that the quality of school library programs was deteriorating in spite of the importance placed on information literacy as articulated in "The Goals of Schooling" (see page 38). One of the six goals included in the policy document focused on the development of skills that would allow students to use information to enhance their learning experiences. As part of their experience within the school system, students should be given the opportunity to:

> Develop the learning skills of finding, organizing, analyzing, and applying information in a constructive and objective manner (Alberta Education 1978).

In response to the results of A Position Paper on School Libraries in Alberta (1983), Alberta Education identified a need to develop a provincial statement of policy,

guidelines, procedures and standards to guide the development and implementation of effective school library programs within the Province. The resulting policy stated:

> Students in Alberta schools should have access to an effective school library program integrated with instructional programs to provide improved opportunities for student achievement of the goals of Basic Education for Alberta. (Alberta Education 1984, 2)

In order to encourage improvement in school library services, Alberta Education pledged to maintain the provision of assistance to school jurisdictions in supporting quality in the development, implementation and assessment of school library programs.

In 1985 Alberta Education published Focus on Learning, an integrated program model for school libraries. This model was designed to help schools to involve students in the planned and purposeful use of library resources and to help them grow in their ability to gather, process and share information. The model had three components–management, development, and instruction–all linked through cooperative planning and implementation.

In order to address the task of effective information processing, Alberta Education then focused on critical thinking skills. Teaching Thinking, a draft discussion paper developed in 1989, and followed by a handbook with the same title published in 1990, provided rationale and guidelines for direct instruction in these thinking skills throughout the learning environment of the school.

Focus on Research, also published in 1990 by Alberta Education, addressed one facet of the instructional component of Focus on Learning. Students and teachers were provided with a model for transforming information into personal knowledge. According to the handbook, the Focus Model represents a comprehensive research process that can be applied in any subject area and in any real-life situation, in or outside of school. This process approach is based on stages of research as described by Kuhlthau (1985a), who identified not only the physical tasks of the information search process but also the affective and cognitive elements.

While Focus on Research suggested that the actual information-seeking behaviour of students should change as they become more proficient at dealing effectively with vast amounts of information and transforming selected pieces of information into personal knowledge, there was no indication that the resource requirements of students would change. The handbook refers the reader to the suggested

minimum resource standards for Alberta school libraries as described in Focus on Learning (Alberta Education 1985).

Although there have been several studies on resource use by students completing research assignments (Mancall 1978, Mancall and Drott 1979, Drott, Mancall, Barber, and Robinson 1980, Wozny 1982, Hall 1986), there has been very little research that linked research strategy and resource use. There have been no formal studies published to date on the process-based Focus Model and resource use by students. An urban high school that was actively implementing the Focus Model and that was willing to support a university-based study of its library programs provided the opportunity to explore in some depth the way in which students locate and use resources to complete curriculum-based research assignments.

IV. Statement of the Problem

The general research question was: How do students in a large urban high school that has adopted the Focus on Research Model of research meet their information needs in order to complete curriculum-based research assignments?

The specific questions addressed include:

a) How do the mission, goals, objectives, and policy statements of the education infrastructure, including the school library, affect the information-seeking behaviour and resource use of students?

b) How do the development and implementation of curriculum-based research assignments affect the information-seeking behaviour and resource use of students?

c) To what extent do students use the resources of the school library in completing curriculum-based research assignments?

d) To what extent do students use resources outside the school library in completing curriculum-based research assignments?

e) What information resources are cited by high school students in curriculum-based research assignments in terms of number, format diversity, and currency?

V. Definition of Terms

The following terms have been used throughout this study in describing how students accomplish the task of completing curriculum-based research assignments: information, information need, information resource, information search process, curriculum-based research assignments, and Focus on Research Model. These terms have been used as they are defined below.

Information - that which is capable of transforming image structures (Belkin 1978; Belkin, Oddy, and Brooks 1982); any stimulus that alters the cognitive structure of a receiver (Paisley 1980)

Information need - conceptual incongruity in which the person's cognitive structure is not adequate to a task (Ford 1980); situation in which a person recognizes something wrong in his or her state of knowledge and wishes to resolve the anomaly (Belkin 1978); situation in which there is insufficient knowledge to cope with voids, uncertainty, or conflict in a knowledge area (Horne 1983); state of uncertainty due to a lack of understanding, a gap in meaning, a limited construct (Kuhlthau 1993b)

Information resource - any type of data used to resolve an anomalous state of knowledge in which the user experiences gaps, lacks, uncertainties, and/or incoherencies (Belkin 1978)

Information search process - a sense-making procedure in which an individual actively constructs a new meaning in order to progress through a situation causing an information gap (Dervin 1977, 1983); a complex learning process involving the user's thoughts, actions, and feelings (Kuhlthau 1990, 111); stages in the process include task initiation, topic selection, prefocus exploration, focus formulation, information collection, and search closure (Kuhlthau 1993b); process includes both information-seeking behaviour and resource use

Curriculum-based research assignments - any information problem solving tasks assigned to students in credit courses by their teachers, requiring the gathering of information beyond the limits of course textbooks and the creation of some type of product using the information gathered (In this case study, "curriculum" has been used to mean classroom curriculum, not necessarily the specific curriculum defined by Alberta Education Program of Studies for the particular subject area.)

Focus on Research Model - a resource-based, comprehensive research process developed in Focus on Research. The Model is divided into five stages–planning, information retrieval, information processing, information sharing, and evaluation. It contains both a continuum of research procedures and skills, and a continuum of levels of research (introductory to advanced). The Model was developed by Alberta Education and is supported by other Alberta Education models and policy documents (Focus on Learning 1985, Teaching Thinking 1990b)

VI. Delimitations of the Study

A case study is an examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a social group. In each case, a bounded system must be identified as the focus of the investigation (Merriam 1988). In this study the bounded context is the cooperative library research program that occurred at one urban high school during the months of April, May, and June 1993. Sub-units in the case study included eleven classes in Grades 10 and 11, and six teachers who agreed to work with the Teacher-Librarian in at least the planning stage of curriculum-based student research assignments. The classes were selected from three core subjects–English, Social Studies, and Biology.

Although the high school that was chosen as the research site had been actively implementing the Focus on Research Model since 1990, the study was restricted to a relatively small convenience sample, limited in both time span and numbers. Each class in the study did complete a research assignment. However, several of the teachers noted that the student assignments chosen for this case study represented the last of a series of research projects that students had been required to complete as part of their course work. Therefore, this study captures only a part of the process involved in teaching and implementation of the Focus Model in any particular class. ". . . [A] teacher may decide to focus on only one aspect of the research stages or skills for a certain assignment" (Alberta Education 1990a, 4).

Time and resource restraints on me as the researcher determined to a large degree the delimitations of the study. This study is seen as a starting point for a continuing investigation into the relationship between the information-seeking process and resource use by students.

VII. Limitations of the Study

Many of the limitations of this study arise from the inherent nature of the case study methodology. The study is limited to a rich and holistic description of resource use by students in one urban high school during a three month period. It does not predict future resource use in that school, nor can the results of the study be used to describe

resource use at any other school. The case study is also limited by the sensitivity and integrity of the researcher who is the primary instrument of data collection and analysis (Merriam 1988). This study was conducted by a library and information studies student who has had very little experience in the urban high school context. In addition, I have been an active advocate of school libraries and student research for the past two decades. My past experiences and biases may have caused some types of data to be overlooked or over-emphasized.

The political context of this study may also have imposed some limitations. In a context in which school budgets are being cut and programs are being down-sized or eliminated, a case study of a particular area, like the library program, has the potential of affecting the participants in a number of negative ways.

> . . . [A]t all levels of the system what people think they're doing, what they say they are doing, what they appear to others to be doing, and what in fact they are doing, may be sources of considerable discrepancy. . . . Any research which threatens to reveal these discrepancies threatens to create dissonance, both personal and political. (MacDonald and Walker 1977, 186)

VIII. Significance of the Study

The Focus on Research Model represents Alberta Education's attempt to formalize and apply the most current research and education theories to teaching students how to deal effectively and efficiently with their information needs. This case study provides a detailed description of information use by students in one urban high school that is actively implementing and supporting the Focus Model. While the results cannot be generalized to other contexts, the study represents a beginning in the development of an understanding of the relationship between process-oriented research strategies (in this case, the Focus on Research Model) and information resource use by students.

The study explores the role of the teachers and teacher-librarians in teaching the Focus on Research Model and in assisting students to identify information sources and to retrieve information. Results of the study allow a comparison with earlier studies of resource use (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980; Wozny 1982; Hall 1986) that identified the importance of professional instruction in the development of successful information-seeking strategies by students.

The study may also offer some suggestions for the development of research assignments that encourage students to make the best use of the information resources available, both within the school library and outside the school. If process-oriented library research does place demands on information resources that differ from those of the more traditional source and pathfinder types of student research, as reported by Mancall and Drott (1983), then the study may be able to offer some insights in the area of school library collection development and evaluation. There may need to be a change in collection development and selection policies in order to better serve the curriculum-based research needs of the students.

IX. Organization of the Report

This report has been divided into six chapters. Chapter 1 describes the focus and context of the study, which can be characterized as revelatory in nature (Yin 1989). Although the study refers to earlier research in student resource use, this report describes resource use by students within the context of the Focus Model of research, an area that has not been previously studied in a formal way.

Chapter 2 reviews the literature relating to the area of study.

Chapter 3 describes the case study research methodology as implemented in the study. The philosophical orientation, the study design, data collection and analysis methods, and the issues of trustworthiness and ethics are discussed.

Chapter 4 is a description of the case. Considerable attention is given to describing the context in which the school, the school library, the Teacher-Librarian, the teachers, and the students function. The case consists of six sub-units. Each of the six student research assignments is described in some detail.

Chapter 5 presents findings that relate to the implementation of the Focus Model and resource use by students.

Chapter 6 summarizes the findings from the study and suggests some implications for current practice and for further research.

A bibliography and appendices have been included at the end of the report. Included in the appendices are copies of the six student research assignments and samples of the data collection instruments. The reader is referred to these sections throughout the study.

Chapter 2

REVIEW OF THE LITERATURE

I. Introduction

Glaser (1978) recommends that an examination of related literature not begin until the researcher is in the field so that the design of the study is not restricted by the approaches and findings of earlier studies of a similar nature. Bogdan and Biklen (1982) support this view, arguing that study of relevant literature during data collection will enhance the quality of analysis. However, Yin (1989) identifies a need for study of related literature early in the case study in order to allow the researcher to develop a basic understanding of the research problem.

> A person must have a firm grasp of the issues being studied, whether this is a theoretical or policy orientation, even if in an exploratory mode. Such a grasp reduces the relevant events and information to be sought to manageable proportions. (63)

The compromise position of Merriam (1988) in which relevant literature is explored in the earlier stages and then studied and examined in more detail as it relates to analysis and findings was adopted in this study.

A survey of related literature was begun early in the study in order to gain an overview of the field and to allow the identification of the relevant issues pertaining to students' information-seeking behaviours and resource use. During the construction of data collection instruments and the actual data collection process, it was important to identify the elements in which deviations could jeopardize the validity of the study results. However, it was also important to maintain some flexibility in order to remain open to important variables that had not been previously considered. It was necessary to be able to interpret information as it was being gathered and watch for contradictions in data that might indicate a need for further study and/or more data-gathering.

More in-depth study of relevant literature was conducted during the process of data collection and analysis, with special attention to previous studies on resource use (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980;

Wozny 1982; and Hall 1986) and on the information search process (Kuhlthau 1985a, 1985b, 1987, 1988a, 1988b, 1988c, 1988d, 1989, 1990, 1991, 1993a, 1993b).

The literature review focused on two areas of research and theory:

1) the information search process, particularly as it is taught in school library programs; and

2) information resource use by students, both in the school library and outside the school library.

II. Evolution of School Library Programs

> The ability to deal effectively with the proliferation of information is more essential now than at any other time in history. For information to become personal knowledge, students have to make connections and see relationships between what they read, see or hear and what they know. They need to learn a comprehensive research process that can be applied in any subject area and in real-life situations. (Alberta Education 1990a, vii)

The presence of a school library has traditionally meant the evolution of some type of instructional library program developed by teachers and teacher-librarians to help students use the resources. The focus of the instructional program has changed over the past three decades. A widely accepted paradigm which was developed in the 1960s produced a program with an instructional component that emphasized literature appreciation, but also included instruction in library skills and the support of all curriculum areas (Eshpeter and Gray 1989). However, in the 1980s, support for the traditional model of library program began to disappear. The literature component, which had been regarded as the major responsibility of the library, was gradually becoming part of the language arts curriculum. This shift subsequently led to reassessment of other components of the program. Ken Haycock (1979) was one of the first in Canada to introduce the concept of the teacher-librarian as cooperative planner and joint implementer of curriculum. However, this shift in emphasis did little to advance the cause of library programs in schools. Programs based upon methodology rather than content were not considered to be essential (Eshpeter and Gray 1989).

During the last decade, a number of alternative programs have been developed to replace the traditional paradigm: advocacy (emphasis on the public relations role of the teacher-librarian), instructional design (process-based approach with no identifiable body of content), and thinking skills development (a popular current issue in American

education). Within the Canadian context, an information-based program alternative has gained increasing exposure and acceptance. The program addresses the information literacy requirements of students within the context of curriculum-based research and cooperative planning, but has a separate instructional entity that includes goals that are uniquely library or information-based (Eshpeter and Gray 1989).

III. The Teaching of Library and Information Skills

Three models for instruction in library and information skills have been identified: the source approach, the pathfinder approach, and the process approach (Kuhlthau 1987). The older and more traditional source and pathfinder approaches concentrate on skills that students need to use a particular library and specific sources (Loerke 1992). More recent instructional programs, such as the one developed by Alberta Education in Focus on Research and the Big Six Skills curriculum developed by Eisenberg and Berkowitz in Curriculum Initiative (1988), have employed a process approach that teaches strategies for using information for thinking and learning.

The process approach as exemplified in the Focus on Research Model and the Big Six Skills curriculum is based upon the research of Carol Kuhlthau (1985a, 1985b, 1988a, 1988b, 1988c, 1988d, 1989) who developed a model of the information search process. Results from a series of five studies investigating the experiences of individuals in information-seeking situations caused Kuhlthau to conclude that the search process must be described and understood from the user's perspective of information-seeking. There is a gap between information systems' traditional patterns of information provision and the user's natural process of information use (Kuhlthau 1991). The traditional bibliographic paradigm focuses on collecting and classifying texts and devising search strategies that match information systems' representations of texts. The bibliographic paradigm operates within an imposed system of classification order, whereas the information seeker's actions are typically characterized by chaos, uncertainty, and confusion. Kuhlthau (1990) describes the information search process as:

> a complex learning process involving the user's thoughts, actions, and feelings, which takes place over an extended period of time, which involves developing a topic from information in a variety of sources, and which culminates in some sort of presentation on the individual's perspective on the topic. (111)

There is no neat match between the information-seeking process of the user and the provision of information through the established systems because information-seeking from the user's perspective is a process of sense-making within a personal frame of experience (Dervin 1983). It is the interaction between formal organized sources of information and personal experiential sources that transforms information into meaning for the user.

IV. The Information Search Process

Kuhlthau developed a model of the information search process that goes beyond the traditional description of physical actions to include changes in users' cognitive thoughts and affective behaviours (Kuhlthau 1988a; Kuhlthau, Turock, George, and Belvin 1990; Kuhlthau 1991). (See Figure 2.1: Model of the Information Search Process.) The theoretical basis of the research includes the work of Kelly (Personal Construct Theory 1963) and Taylor (Levels of Information Need 1968) in the study of affective changes, and the research of Belkin (Anomalous State of Knowledge 1978, 1982) in the description of cognitive changes.

A similar dichotomy between information systems and information-seeking behaviour is identified by Jakobovits and Nahl-Jakobovits (Jakobovits and Nahl-Jakobovits 1987; Nahl-Jakobovits and Jakobovits 1985, 1988, 1990, 1992) in the study of bibliographic instruction.

> Library science needs two kinds of classification schemes: one for books and materials, the other for user needs and behaviours. (Jakobovits and Nahl-Jakobovits 1987, 203)

Using the theory of educational psychology, Jakobovits and Nahl-Jakobovits identify affective behaviour (dynamic psychology), cognitive behaviour (cognitive psychology), and psychomotor actions (behaviourism) as the three domains of information search behaviour. Within each domain, three levels or stages of increasing depth of influence are described: orientation, interaction, and internalization. These levels dictate the instructional objectives for information searching competence in each of the three domains.

Similar levels of learning are described in other information-seeking process models. Stripling and Pitts (1988) use the Taxonomy of Thoughtful Reactions (REACTS)

which includes recalling, explaining, analyzing, challenging, transforming, and synthesizing. Eisenberg and Berkowitz (1988) describe six cognitive levels, based on Bloom's Taxonomy of Educational Objectives (1956). The levels in ascending order are: knowledge, comprehension, application, analysis, synthesis, and evaluation. Bloom's categories are also used in Teaching Thinking (Alberta Education 1990b) to design different levels of questions to stimulate student thinking. Focus on Research refers to a continuum of levels of research, introductory to advanced, that students iteratively experience as they progress from teacher-directed to student-directed learning.

Closely linked to the information search process model of Kuhlthau and the shift to a user-centred approach is the incorporation of critical thinking skills and processes into the library media program (Krapp 1979; Mancall, Aaron, and Walker 1986; Stripling and Pitts 1988; Craver 1990). In Dimensions in Thinking (Marzano, Brandt, Hughes, Jones, Presseisen, Rankin, and Suhor 1988), the authors identify five components of thinking: metacognition, critical and creative thinking, thinking processes, core thinking skills, and relationship of content-area knowledge to thinking. The core thinking skills are broken down into eight sets of sub-skills that are utilized in thinking processes. These sub-skills, along with activities that occur during the practice of each sub-skill, listed in the order in which they usually occur during a learning or problem solving experience, are as follows:

1) focusing skills (defining problems, setting goals);

2) information gathering skills (observing, formulating questions);

3) remembering skills (encoding, recalling);

4) organizing skills (comparing, classifying, ordering, representing);

5) analyzing skills (identifying attributes, components; identifying main ideas; identifying relationships, patterns; identifying errors);

6) generating skills (inferring, predicting, elaborating);

7) integrating skills (summarizing, restructuring); and

8) evaluating skills (establishing criteria, verifying).

The similarity in the types of skills and activities described in the core thinking skills and in the Focus on Research Model is striking. The Focus Model divides the

research process into five stages, with a description of skills and activities that occur in each stage. The stages and skills/activities in the Focus Model are as follows:

1) planning
   - establish topic,
   - identify information sources,
   - identify audience and presentation format,
   - establish evaluation criteria,
   - review process;

2) information retrieval
   - locate resources,
   - collect resources,
   - review resources;

3) information processing
   - choose relevant information,
   - evaluate information,
   - organize and record information,
   - make connections and inferences,
   - create product,
   - revise and edit,
   - review process;

4) information sharing
   - present findings,
   - demonstrate appropriate audience behaviour,
   - review process; and

5) evaluation
   - evaluate product,
   - evaluate research procedures and skills,
   - review process.

Kuhlthau (1990, 1991) lists six stages in the information search process model: initiation, selection, exploration, formulation, collection, and presentation. Within each stage, she describes feeling, thoughts, and actions that commonly occur, based on the study of information users (see Figure 2.1: Model of the Information Search Process). There are two major decision points during the search process: topic selection and focus formulation (39). Results of studies by Kuhlthau (1993b) indicate that students base their decisions regarding topic and focus upon four criteria: personal interest, assignment requirements, information available, and time allotted.

Research on information-seeking from the user's perspective has shown some important differences between the information search process model and the user's perception of task (Kuhlthau 1991, 1993b). A series of five studies of library users revealed that participants' thoughts and feelings usually matched the thoughts and feelings described in the model. However, the tasks identified by users did not match the tasks predicted by the information search process model. The tasks predicted by the model show a progression from recognizing an information need, to identifying a general topic, to exploring information on a general topic, to formulating a specific focus, to gathering information pertaining to the specific focus, to completing the information search. Most participants, however, limited their responses to gathering and completing in all stages with few selecting the more formative tasks at any point in the process (Kuhlthau 1991, 368-69).

Kuhlthau notes that gathering and completing are traditional information-seeking tasks. However, exploring and formulating appear to be tasks more appropriate to the early stages of the information search process when users are experiencing a high degree of uncertainty and have not yet formed a focus for their research. Over half of the users studied by Kuhlthau did not show evidence of reaching a focused perspective of their topic at any time during the search process. Kuhlthau suggests that lack of focus formulation and development of a personal perspective may be the result of a belief on the part of the user that the purpose of research is to summarize one or more views taken from information sources, rather than to develop a personal understanding of a topic. She also identifies constraints built into information systems and services offered by intermediaries (reference staff) that may encourage users to limit tasks to that of gathering and completion.

> Within the bibliographic paradigm, the message communicated by the information system is that the user's task is to gather and to complete regardless of the state of the problem. The system does not recognize different problem states. The possibility of more exploratory tasks leading to formulating and sense-making are not readily apparent. . . . Systems and intermediaries are presently directed to answering well-defined questions, not ill-defined ones reflecting uncertainty. (Kuhlthau 1991, 370)

Both of these factors–the perceptions of the users regarding tasks appropriate to different stages of the information search process and the limitations inherent in traditional information systems–tend to inhibit the process of construction during the information

search process, according to Kuhlthau. She describes the formulation of a focus as a critical point in the information search process. Without a focus, the search does not reach the level of a sense-making or constructive process for the user.

Similar models of the information search process have been developed, both in Canada and the United States. Eshpeter and Gray (1989) describe a five-phase information cycle: pre-research, information retrieval, information processing, information organizing and creating, and information sharing. The Big Six Skills (Eisenberg and Berkowitz 1988) develop an information problem solving process that includes six stages: task definition, information-seeking strategies, location of and access to information, use of information, synthesis, and evaluation. Focus on Research presents a research model that consists of a continuum of five research phases: planning, information retrieval, information processing, information sharing, and evaluation.

It is the user-based perspective that separates the process models of information-seeking from the more traditional source and pathfinder models. Process models recognize that information seekers must progress through a series of stages before their needs for information can be translated in well-defined questions that will be recognized by information systems and intermediaries. Upon completion of the information system transaction, the process continues as the user struggles to transform information into personal knowledge. The information search process is a holistic, iterative process that incorporates the more traditional skills of locating and using information sources into the much larger process of creating meaning from information.

> The information search process is a learning process in which the choices along the way are dependent on personal constructs rather than on one universal predictable search for everyone. (Kuhlthau 1993b, 9)

In Seeking Meaning: A Process Approach to Library and Information Services (1993b), Kuhlthau proposes a process theory of information-seeking based on an uncertainty principle.

> Uncertainty due to a lack of understanding, a gap in meaning, a limited construct initiates the process of information-seeking. (xxiii)

According to Kuhlthau, the process theory indicates a need for examining and redefining the types of mediation that occur in libraries, particularly the traditional services of reference and user education. Kuhlthau defines mediation as any type of intervention by

one person in the search process of another person. Although mediators can be informal, such as family and friends, Kuhlthau focuses primarily on the roles of formal mediators, such as librarians and teachers. Kuhlthau divides reference and user education services into five levels of intervention, based on the complexity of the problem and the user's progress through the information search process. The five reference service roles are organizer, locator, identifier, advisor, and counsellor. The five educator roles are organizer, lecturer, instructor, tutor, and counsellor. At the lowest level of organizer and at the highest level of counsellor, Kuhlthau describes the reference and education services as merging into one.

The next step, according to Kuhlthau (1993b), is to identify ways to diagnose the user's problems in order to determine the level of service and education most appropriate for the user. Five zones of intervention are proposed. The five zones correspond with the five levels of reference and instruction.

> In zone one (Z1), the problem is self-diagnosed and a search is conducted by the user independent of any intervention by the librarian. In zones two (Z2) through four (Z4), the user's problem is diagnosed as requiring product or source intervention. . . . In zone five (Z5), however, the information professional diagnoses the user's problem as requiring process intervention, which includes entering into an ongoing dialogue and guiding in exploration, formulation, construction, learning, and application in the Information Search Process. (Kuhlthau 1993b, xxiv)

Kuhlthau suggests that there is a need for library professionals to evaluate current services and to redesign intervention services in order to recognize and respond to the needs of users in the process of learning from both information access and information use.

Kuhlthau (1993a) has also conducted research on the implementation of a process approach to information skills in library media programs. After collecting responses from teachers and library media specialists for over two years, Kuhlthau identified several elements that either inhibited or enabled the successful implementation of a process approach. She discovered that most library programs experiencing success in implementing a process approach to information use focus on student learning issues, whereas programs encountering difficulties in implementation cite logistical problems (18). The three primary inhibitors of implementation are:

1) lack of time (lack of student time on task and lack of time for planning for team instruction between the teachers and library media specialists);

2) confusion of roles, particularly between the teachers and library media specialists; and

3) poorly designed assignments that do not encourage a process approach. (14)

Elimination of the inhibitors does not ensure successful implementation of a process-based approach to information-seeking. Kuhlthau describes four basic enablers as principles for successful implementation:

1) a team approach to instruction that includes administrators, teachers, and library media specialists;

2) a constructivist view of learning that is espoused by all members of the instructional team;

3) a shared commitment by the instructional team to empowering students to take control of their learning experiences and to teaching skills necessary for lifelong learning; and

4) a proficiency, developed through collaboration with colleagues of the teaching team, in the design of student learning activities that support the process approach to information skills. (16-17)

V. Information Resource Use by Students

Much of the research on resource use by students has focused on collections in school libraries, on how well the collections serve students, and on how school libraries can be expanded and/or updated (automated) in order to serve students more effectively. Collection development in school libraries has received a great deal of attention in the past two decades. As the cost of print materials has spiralled and budget monies allocated for school library resources have decreased, drastic changes in collection development policies have become necessary. School libraries can no longer afford to maintain collections of supplementary reading. They are not public library collections housed in a school (Loertscher 1985, Eshpeter and Gray 1989). The traditional philosophy that a school library collection should contain the best of what is published in a current year leads to the acquisition of large numbers of materials on topics not covered in any program of studies, curriculum guide, or textbook. As the role of the school library has changed, so has the role of the collection. According to Van Orden (1988), neither the collection nor the media program is an end in itself; both exist to achieve the

educational goals of the school. Many modern educators consider the purpose of the collection in the school library to be primarily that of curriculum implementation (Mancall and Swisher 1983, Loertscher 1985, American Library Association and Association for Educational Communications and Technology 1988, Callison 1990). The term "collection building," which refers to continual adding of appropriate materials, has been replaced by "collection development," which signifies a systematic process of carefully controlling the creation of a centre of relevant materials for a specific clientele (Mancall and Swisher 1983).

Analysis of the library patron's communities is the first phase in the collection development process. Callison (1990) and Loertscher (1985) suggest that a community analysis in the school setting must include an in-depth curricular study. Community analysis also includes a description of the user behaviour. In the last fifteen years, there have been relatively few use and user studies conducted in the public school setting. Most have been based on bibliometric or citation analysis of references taken from student bibliographies. Limitations of these types of studies in relation to collection development decisions have been noted in the literature (Wallace 1987, Callison 1990). Citation analysis may document what materials are popular with students but may not indicate whether their information needs have been adequately met. Some research studies have attempted to overcome these limitations through triangulation of data. Additional data have been collected through questionnaire surveys of the students and teachers, and through semi-structured interviews with students, teachers, and teacher-librarians (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980; Hall 1986).

Mancall, Drott, Barber, and Robinson (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980) developed a user-centred approach to analysis of the information-seeking behaviour and resource use of high school students. The two studies examined the nature and currency of resources used by high school students. The first study (Mancall 1978; Mancall and Drott 1979) focused on a sample of six academic high schools. The second study (Drott, Mancall, Barber, and Robinson 1980) was broadened to include fifteen schools and to encompass a greater variety of assignments and students. Purposeful samples consisted of 1845 students in 73 classes. Data for both studies were gathered from four sources: bibliographies of student papers,

student and teacher questionnaires, and interviews with school librarians. Both studies, employing a combination of bibliometric and survey methods, reported that high school students used several information facilities in obtaining materials for research assignments, and that they were strongly book-oriented with respect to the type of materials used.

In the earlier study (Mancall 1978, Mancall and Drott 1979), the most important factors in materials use were determined to be access to area resources and the specific preparation and instructions given by the teacher and the librarian. Mancall (1978) suggested that more research was needed to investigate the effect that the specifics of the assignment and the instruction provided by the teacher and the school librarian had on student performance. Mancall and Drott (1979) reported that students at the high school level had already developed their own styles and habits in seeking and using information. Results of the research suggested that the effect of professional instruction was more important than the availability of resources, the intellectual orientation of the community, or the socio-economic level of the school district. Mancall and Drott (Mancall 1978, Mancall and Drott 1979) called for further research into collection development choices, and opportunities for interlibrary cooperation. In Measuring Student Information Use: A Guide for School Library Media Specialists (1983), Mancall and Drott used the second study (Drott, Mancall, Barber, and Robinson 1980) as a model for library media specialists who wished to collect similar data on student use of information resources for the purposes of planning and collection development within local environments.

In 1982 Wozny conducted a study to describe use of libraries and information resources by fifty-three Grade 9 honours students in science. All of the students received training in online bibliographic searching as well as instruction in the more traditional modes of accessing the literature. Although the patterns of information sources cited in student bibliographies were similar to the findings of Mancall and Drott, Wozny noted that cooperative training strategies developed by the teacher and teacher-librarian did affect student use of information.

> The online bibliographic searching experience demonstrates the importance of the teacher and library media specialist in the student's research process. They are able to bring a new way of thinking to the instructional process: a view that information, whatever its format or location, is important. (42)

Collection use and information-seeking behaviours of high school students have also been studied in a western Canadian context. A study by Hall (1986), patterned upon

the earlier Mancall and Drott studies, was conducted in the Prince George School District during the 1983-84 academic year. Hall described the information-seeking patterns of Grade 10 students in the preparation of assigned research papers for core curriculum courses. Although the results of the Hall study differed in some ways from the earlier studies of Mancall and Drott, the major patterns were replicated. Her most important finding was the influence of instruction on student performance: information use by students was more affected by the goals and objectives of the teacher and/or teacher-librarian than by the accessibility or availability of materials from any facility. In recommendations for further research, Hall called for other bibliometric studies to see if the patterns could be replicated in different locations and in different time frames. She also recommended further research to explore the influence of the classroom teacher's and the teacher-librarian's instruction on student information-seeking behaviour.

In a more recent article, Mancall (1991) examined the relationship between collections and users in the online environment. She suggested that user behaviours will change as students receive more appropriate instruction in information access/utilization skills, instruction that she describes as skills in "searching across the curriculum."

> If learning how to ask questions and then to search successfully for answers is as critical to individuals as learning to write effectively, then the teaching of searching should be thoroughly integrated into all subject areas. (87)

According to Mancall (1991), when an information access/utilization curriculum is developed and integrated with the curriculum of the school, students will become:

1) more information-oriented (less format-oriented);

2) more adept at using multiple concepts in information searches;

3) more concerned with information location (less concerned with material location);

4) more adept at using online searches in all subjects; and

5) more concerned about equity in access to information. (88)

The current study most directly relates to the research of Mancall, Drott, Wozny, and Hall. They all noted the primary effect of professional instruction on student performance and collection use but made no attempt to study how different types of instruction affect student behaviour and collection use. The Focus on Research Model is

a formalized program for teaching a structured information-seeking strategy to students. This method is radically different from the traditional source and pathfinder instructional techniques because it is a process-based model of information-seeking (Kuhlthau 1991). Very little emphasis is placed on the development or use of collections in the Focus on Research Model. The Focus on Research handbook states that research activities will require access to an adequate quantity and variety of appropriate, up-to-date print and non-print resources from the school library, as well as other information sources. It also refers to the suggested minimum resource standards for Alberta school libraries as set in Focus on Learning (Alberta Education 1985). (These standards are listed in Appendix B: Standards for School Libraries; The School Library Collection.) However, the document does not address the question of what new and additional demands a process-oriented research strategy will place upon traditional school library collections and on other information sources beyond the school library. In fact, there seems to be an implicit assumption that the collection standards that were deemed to be acceptable in 1985 in Alberta when source and pathfinder research techniques were traditionally employed are still acceptable for schools implementing the Focus on Research Model.

Figure 2.1

MODEL OF THE INFORMATION SEARCH PROCESS

Stages	Task Initiation	Topic Selection	Prefocus Exploration	Focus Formulation	Information Collection	Search Closure	Starting Writing
Feelings	uncertainty	optimism	confusion, frustration, and doubt	clarity	sense of direction/ confidence	relief	satisfaction or dissatisfaction
Thoughts	ambiguity ——————————————————————> specificity						
	——————————————————————> increased interest						
Actions	seeking relevant information ——————————> seeking pertinent information						

(Copied, with permission, from Carol C. Kuhlthau, Seeking Meaning: A Process Approach to Library and Information Services, p 43; Copyright 1993 by Dr. Carol C. Kuhlthau.)

Chapter 3

DESIGN OF THE STUDY

> Our basic thesis is that the case for any research method . . . cannot be considered or presented in the abstract, because the choice and adequacy of a method embodies a variety of assumptions regarding the nature of knowledge and the methods through which that knowledge can be obtained, as well as a set of root assumptions about the nature of the phenomena to be investigated. (Morgan and Smircich 1980, 491)

I. Philosophical Orientation

This study was based on philosophical assumptions that were derived from the paradigms of symbolic interactionism (Blumer 1969, Rock 1982) and constructivism (Kelly 1963). Both paradigms, the former representing a sociological perspective and the latter a psychological one, assert that there are multiple realities, each a function of personal interaction and perception (Kuhlthau 1993b). Not only are there many different realities, but the realities are constantly changing and evolving. Human social life consists of interactions in which individuals create shared meanings (Babbie 1986). Constructivism focuses on the development of personal realities, which for each individual is a unique process based on prior constructs and experience, as a way of finding meaning and making sense of the world (Kelly 1963). Symbolic interactionism is concerned not only with the construction of reality at the individual level, but also with:

> . . . the way in which social worlds are built up by negotiated perspectives that continually define reality; the way in which social worlds influence one another and engender new constellations of meaning; and the relationship between such worlds and the larger, overarching symbolism that lends some coherence to society. (Rock 1982, 37-38)

At all levels, the symbolic ordering of the social world is never static. Social realities are created, sustained, and destroyed in daily interactions. Research within these perspectives seeks to describe and interpret a complex interrelated world in which there are multiple realities. It is descriptive and exploratory, with an emphasis on process rather than simply the products (Merriam 1988).

Qualitative methodologies and naturalistic inquiry are generally considered most appropriate for study within the interactionist and constructivist paradigms. The objective of a qualitative approach is to understand the meaning of an experience (Merriam 1988). The analysis strives to describe situations in their uniqueness as part of a particular context (Merriam 1988), hence the term naturalistic inquiry. Primary strengths of qualitative research are flexibility, degree of depth, and gestalt (Babbie 1986). However, because qualitative methods tend to rely heavily upon human instruments (researchers and informants) in data gathering and analysis, trustworthiness of the results can be jeopardized by many different types of distortions: distortions arising from the researcher's presence at the site, distortions arising from the researcher's involvement with the informants, distortions arising from bias on the part of either the researcher or the informants, and distortions arising from the manner in which data gathering techniques are implemented (Lincoln and Guba 1985). Numerous safeguards are necessary to ensure the trustworthiness (Lincoln and Guba 1985) or validity (Babbie 1986) of qualitative research.

Babbie (1986) argues that the most effective and useful research occurs when qualitative and quantitative research methods are allowed to complement one another. In fact, Babbie suggests that the distinction between qualitative and quantitative data in social research is artificial. Most raw data collected by social researchers are qualitative in nature. Quantification can be viewed as a transformation of data from non-numerical to numerical form (Babbie 1986). Brannen (1992) sees quantitative and qualitative research as different but suggests that the methods have achieved a certain degree of independence from their epistemological foundations, and that the advantages of integrating qualitative and quantitative research methodologies are becoming increasingly recognized and accepted.

II. The Case Study Research Methodology

The selection of a specific research design for this study began at the most basic level of choosing between experimental and non-experimental (descriptive) research. The decision to choose the case study, a non-experimental research design, was based on the following criteria:

1) The nature of the research questions: "How" and "What" questions suggest exploratory and descriptive research which favour the use of case studies (Yin 1989).

2) The amount of control: "The purpose of most descriptive research is limited to characterizing something as it is. There is no manipulation of treatments or subjects" (MacMillan and Schumacher 1984, 26).

3) The desired end product: In descriptive case studies it is impossible to identify all of the important variables in advance. The end product is a holistic, intensive description of a contemporary phenomenon.

4) The focus of the study: The case is "an instance drawn from a class" (Adelman, Jenkins, Kemmis 1983, 3).

Merriam (1988) defines a case study as "an intensive, holistic description and analysis of a single instance, phenomenon, or social unit within a bounded context" (16).

The utility of the descriptive case study methodology, especially for the study of innovations within the field of education, is well recognized. Merriam (1988) characterizes case studies as useful in presenting basic information about areas of education where little research has been conducted. Rich thick description of the phenomenon being studied naturally comes before hypothesizing or theory testing. Descriptive case studies are:

> . . . entirely descriptive and move in a theoretical vacuum; they are neither guided by established or hypothesized generalizations nor motivated by a desire to formulate general hypotheses. (Lijphart 1971, 691)

The descriptive case study research methodology was particularly appropriate for describing how students in one high school using the Focus on Research Model locate, select, and use information resources in course-based research assignments. The Focus Model, a teachers' handbook for developing students' research skills, was published by Alberta Education in 1990 and is still in the adoption stage throughout much of the Province. Very little research on the implementation of the Model has been published to date (Loerke 1992).

> Case studies help us to understand processes of events, projects, and programs and to discover context characteristics that will shed light on an issue or object. (Sanders 1981, 44)

The interaction of the school library program and the Focus Model, implemented primarily by the Teacher-Librarian, and the course-based research assignments, developed

and administered primarily by classroom teachers, represented complex social units consisting of multiple variables with varying degrees of importance. In answering the research questions of the case study, I, as the researcher, considered the information-seeking process employed by the students to be as important as the information sharing products created by the students.

A single case design was deemed appropriate for the study because the case can be characterized as revelatory (Yin 1989). While several studies on resource use by students have been completed in the last decade (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980; Wozny 1982; Hall 1986), the opportunity to study resource use by students working with the Focus Model has been limited by the recency of the innovation and the time required for adoption and implementation of the innovation. Yin (1989) suggests that a single case study is appropriate when an investigator has an opportunity to observe and analyze a phenomenon that has not been previously accessible to scientific investigation. One of the purposes of a single case study is to show how such a phenomenon can be investigated and to encourage and stimulate further research of the phenomenon. This was certainly the case in this particular study. As the Focus Model moves from the adoption to the implementation stage in more schools throughout Alberta, it is hoped that more studies of the information-seeking process and resource use of students will be initiated.

III. Selection of the Research Site

The research site for this study was a medium-sized high school with a population of just over fourteen hundred students, located in an urban centre in Alberta. The site was chosen in consultation with my supervisors at the University of Alberta. They are long-time and active members of the school library network in the province. The choice was narrowed further by time and travel limitations. Final site selection was influenced by my experience as a graduate student studying various library programs in the field. I had had previous contact with this research site in two graduate course-based projects completed in 1992. I had found the climate of the school and the school library to be open to study. Both the Principal and the Teacher-Librarian had been especially supportive of my work, in terms of assistance and access to information. In addition, it was clear that the Teacher-Librarian was receptive to innovation and research in the area

of school library programs and was committed to the implementation of the Focus Model. In fact, the Teacher-Librarian had been active in teaching and implementing the Focus Model since its introduction in 1990.

> . . . I have done it [taught the research process using the Focus Model] for Alberta Education at a science workshop in 1990, when they were introducing Science 10. One of our science teachers and myself modeled how to plan . . . for the research process. (Teacher-Librarian Interview II)

The Teacher-Librarian agreed to approach six teachers to work in a cooperative planning and teaching context on six student assignments during the time frame that I had set.

IV. Data Collection

A. Types of Data

Five methods were used to collect data: interviewing of key informants, observing in the library and classrooms of the school, reviewing of related documents, administering of teacher and student questionnaires, and collecting of student bibliographies. Field notes were used to record my observations in the school setting. Documents examined included those from both Alberta Education and the school relating to library standards, goal-setting, and budget allocations for the library, plus class assignments developed by the teachers and the Teacher-Librarian.

The three primary methods of data collection were interviews, survey questionnaires, and student bibliographies.

1. The Interviews: Each of the six participating teachers was interviewed once; the Teacher-Librarian was interviewed three times. All of the interviews were tape-recorded and transcribed to allow in-depth analysis of both factual and affective content. The interviews were semi-structured and lasted an average of forty minutes; the shortest one lasted twenty-five minutes and the longest one hour and fifteen minutes. Each interviewee was given a copy of the interview questions in advance in order to allow the participant to feel better prepared and more relaxed during the interview. Before the formal part of the interview began, I asked the participant's permission to tape the interview and explained that the object of the interview was to allow the participant to express personal ideas without being influenced by positive or negative feedback from the interviewer. This meant that I could not respond to opinion questions or participate

in any discussion. The informants were assured that the neutral stance that I assumed during the interview was not due to lack of interest or disapproval. I did clarify the meanings of terms or questions when asked, but did not suggest possible responses. All interviews were conducted in the school, and all but one in the work-room of the school library. I followed the pattern of reading the pre-determined questions with little variation. If the desired information was not forthcoming from the interviewee, the initial question was followed by probes that I constructed in advance but did not include in the copy of the interview questions given to each participant. In the case of the probes, I deviated to some extent in order and wording, depending upon the type and amount of information the interviewee had given during the preceding questions. Each interview ended with an open-ended question which encouraged participants to add any other information or comments that they deemed to be relevant to the study.

2. The Questionnaires: Teacher and student questionnaires provided the second main source of data. I administered the questionnaires after the student assignments had been completed. In most cases, the teacher and the students simultaneously completed the questionnaires in the classroom in approximately ten to fifteen minutes. The questionnaires consisted primarily of closed questions, with limited space for additional information in the event that respondents wished to be more specific or to add another category. The participants were instructed to complete the questionnaires in a rapid, straightforward manner, without consultation with classmates, other members of their work units, or the teacher. It was emphasized that answers to open-ended questions should be kept short. The wording of many of the questions closely parallelled the earlier data instruments developed by Mancall (1978) and Hall (1986), with some modifications to accommodate the research site and focus of this study. All student questionnaires were labelled by grade, subject, and student code name, in order to ensure anonymity and to allow the matching of student questionnaires and bibliographies. I coded the teacher questionnaires using letters from the alphabet.

3. The Bibliography Sheets: The third main source of information was the Bibliography Sheets. Students were asked to complete two types, one to indicate what access tools were used in the gathering of information and a second to record all kinds of

information sources used in the completion of the assignment, including information sources that were not directly cited in the written assignments. The Bibliography Sheets were explained and distributed by the Teacher-Librarian at the beginning of each class assignment. Students were asked to use their code names for identification on the Sheets. In the classes in which students worked in groups to complete assignments, each group was asked to submit one set of Bibliography Sheets, with the exception of one class in which students submitted individual bibliographies because much of the research was done on an individual basis before the compilation of information for the group presentations. Bibliography Sheets were collected at the end of the student assignments by the teacher, the Teacher-Librarian, and me. In only one class were the Bibliography Sheets incorporated into the teacher's assessment of the assignment. In the other cases, the teachers required alternate bibliographies in addition to the Bibliography Sheets or did not require any bibliography with the written assignments.

B. Role of the Participants

The interviews were one of the most important sources of data in this case study. In most cases participants assumed the role of informants rather than simply respondents (Yin 1989). This was especially true of the interviews with the Teacher-Librarian. In several instances, I encouraged the Teacher-Librarian and the teachers to go beyond matters of fact and to share their experience and insights on the information search process and resource use by their students. For example, in a discussion of the research process, the Teacher-Librarian suggested a whole new area of study–the effect of approaching research from an interdisciplinary view of knowledge.

> So often, there is not an . . . a global understanding that learning isn't divided into English and Social and Art and Music . . . we're looking at things so narrowly and nothing is just by itself. (Teacher-Librarian Interview II)

In contrast, when teachers and students completed the written questionnaires, they acted primarily as respondents. Their role was that of passive providers of information.

V. Data Analysis

Two types of data analysis were employed. The qualitative data–the interviews, the documents, the field notes–were studied using the content analysis approach. Stone, Dunphy, Smith, and Ogilvie (1966) and Holsti (1969) define content analysis as any technique for making inferences by objectively and systematically identifying specified characteristics of messages. The data were examined for both manifest and latent content (Berg 1989), using an inductive approach in order to develop categories. I began by conducting a detailed study of the interviews, documents, and field notes in order to identify the dimensions or themes that seemed most meaningful to the producers of each message, that is to the policy makers, the administrators, and the key informants. Level of "meaningfulness" was determined partly by the number of times that a particular theme or concept was identified in the data and partly by the degree of emphasis or importance that each theme or concept was given within the written messages. One of the goals of the study was to discover and describe the perceptions of the participants in the study regarding the information search process and information use by students, not to impose some previously developed categorical scheme suggested by a theoretical perspective. The development of inductive categories allowed me to link or "ground" the categories to the data from which they came (Glaser and Strauss 1967, Berg 1989).

The second type of data analysis, a bibliometric approach, was applied to the data taken from student bibliographies and from parts of the questionnaires. Broadus (1987) defines bibliometrics as "a body of research involving physical units of publications, bibliographic citations, and surrogates for them" (377), while Schrader (1981) describes the methodology as "the scientific study of recorded discourse" (151). Mathematical and statistical methods of analysis were applied to the bibliography data in order to describe patterns in the types of resources students used in the completion of their research assignments.

Descriptive statistics, methods and procedures for summarizing, simplifying, reducing, and presenting raw quantitative data (Busha and Harter 1980) were applied to the research data where appropriate, especially the numerical data gathered from the questionnaires and bibliographies.

VI. Ethical Issues

A. Role of the Researcher

Because I was the primary agent in the gathering and analysis of data in the case study, the burden of producing a study that had been conducted in an ethical manner fell upon me as the researcher (Merriam 1988). Yin (1989) suggests that case study investigators are especially prone to bringing preconceived positions or biases to their studies.

> An unethical case writer could so select from among available data that virtually anything he wished could be illustrated. (Guba and Lincoln 1981, 378)

Discussions with my supervisors during the planning, data gathering, and data analysis stages of the study forced me to examine personal biases and philosophical orientations, and to develop guidelines necessary for the implementation of an ethical investigation.

I recognized that my past experience in school libraries, including the library at the research site, and a strong belief in the positive value of school libraries and of student research had the potential to distort the results of the study. I endeavoured to be as open as possible to new ideas and interpretations, while recognizing that it was impossible to remain a detached, neutral observer. In the interviews and informal discussions with key informants (teachers and the Teacher-Librarian), I assumed the role of:

> . . . observer-as-participant, one who identifies himself/herself as researcher and interacts with the participants in the social process but makes no pretence of actually being a participant. (Babbie 1992, 289)

In this role, I was able to gain the flexibility necessary to use the appropriate probes to support and encourage key informants to express their understanding of the research process and its relationship to resource use by their students.

Some of the teachers and students participating in the study tended to act as if they believed that I had an evaluative role in the school. For example, one teacher commented that there seemed to have been more pupil enthusiasm during the research assignment because of the assumed importance associated with having a researcher from the university present during the classroom presentations. The Hawthorne effect has long been recognized in research. I tried to be aware of changes in behaviour that might have been due to the presence of an observer. I recognized a responsibility to develop a rich,

thick description of the case and to report the precise details of measurement and data collection, but also realized that it was impossible to completely eliminate the impact of the observer. Babbie (1986) suggests that the observer and the observed are inextricably linked. "The observer is actually a co-creator of the opinion" (103).

B. Rights of the Participants

The ethical issue that raised the greatest concern in this study was that of protecting the rights of the participants. In order to safeguard the participants from potential negative effects, it was necessary to guarantee as high a level of anonymity and confidentiality as possible–both in the gathering of the data and in the dissemination of research findings.

The protection of student participants within the Province's education system is a particularly sensitive issue. I was required to submit a summary of the project and its methodology to several "watchdogs" charged with protecting the rights of participants in field research in education. Presentations and applications were submitted to the Ethics Review Committee of the School of Library and Information Studies, the Field Experiences Division of the Faculty of Education, representatives of the School Board (Office of the Supervisor for Monitoring and Student Information), the Principal of the School, and the Teacher-Librarian. In addition, the written consent of the parents or guardians of all student participants under eighteen years of age was obtained. Student participants were also asked to sign assent forms to indicate their willingness to participate in the study. I identified the participants through code names only. Students and teachers were assured that the study would have no effect, positive or negative, on students' marks or course work, or on teacher evaluations.

I recognized the danger of inadvertently revealing information gained from individuals that could be used in a negative way. The uniqueness of the case and the relatively small population from which it was drawn presented further difficulties in maintaining anonymity and confidentiality of information, especially for the key informants. Where possible, I adopted a compromise, that of avoiding attributing any particular point of view or comment to a single individual (Yin 1989). The key informants were also given the opportunity to preview any parts of the thesis containing direct quotes and/or paraphrases from their interviews. This allowed informants to clarify

or modify their positions on issues discussed in the interviews if they believed meanings had been distorted in any way.

VII. Establishing Trustworthiness

All research aims to produce valid and reliable knowledge. Case studies are no exception. However, the conventional criteria used in experimental designs may be inappropriate to the naturalistic paradigm (Lincoln and Guba 1985). Different types of research are based on different assumptions about what is being investigated. Qualitative case study is a form of "interpretative" research (Erickson 1986) that considers local meanings that happenings have for the people involved in them. Understanding is the primary rationale for the investigation, rather than the discovery of a law or the testing of a hypothesis. Lincoln and Guba (1985) suggest that credibility, transferability, dependability, and confirmability should be considered more appropriate measures of trustworthiness for the case study than the conventional terms of internal validity, external validity, reliability, and objectivity.

In this study credibility was established through triangulation, prolonged engagement, persistent observation, and member checks by the key informants. I used multiple sources of evidence. The case study's findings were based on the convergence of information from different sources and, in this way, provided multiple views or descriptions of the same phenomenon. Member checks served to verify the compilation and distillation of the data. Key informants were asked to review drafts of the thesis and confirm the information in those parts of the description to which they had contributed. Prolonged engagement and persistent observation provided the necessary breadth and depth of the study. I spent almost an entire school year (October 1992 to June 1993) observing and gathering various types of data at the research site, learning the "culture," building trust, and identifying personal biases arising from past experience and values.

Transferability was addressed through detailed careful description of the research site and the methodology. Lincoln and Guba (1985) suggest that a rich, thick description is needed to provide an information base that will allow the reader to understand the findings and to decide how applicable the results are to another context.

> It is the reader who has to ask, what is there in this study that I can apply to my own situation, and what clearly does not apply? (Walker 1980, 34)

Dependability and confirmability were developed through careful detailed description of the multiple methods used in data collection and analysis, the creation of a case study data base, and maintenance of a chain of evidence. The case study data base consisted of case study notes (produced by me), case study documents (including audio-cassette tapes), and tabular materials (stored on disk). The chain of evidence allows the reader to move from one part of the case study to another, with clear cross-referencing to methodological procedures and to the resulting evidence (Yin 1989). The case study report itself cites relevant portions of the case study data base such as teacher interviews and policy documents. The data base can be inspected to confirm the actual evidence cited and the circumstances under which the evidence was collected. Raw data files for each subject, class, and teacher have been compiled and are open to examination upon request from other researchers. Data collection records are consistent with the case study protocol.

Chapter 4

CASE DESCRIPTION

I. The School

The site for this case study was a high school, situated in a large urban centre in Alberta, with an enrolment of slightly over fourteen hundred students. The school had a reputation within the school division for an emphasis on academic and athletic programs. The staff and student handbooks articulated the school philosophy as follows:

> . . . is an academically-oriented school with a strong Business Education Program, an exciting Creative Arts Program, a thriving Practical Arts Program and an outstanding Athletic Program.
>
> Our strong teaching staff and support personnel are committed to facilitating and guiding learning experiences for our students. We provide an appropriate program within the educational goals and objectives of Alberta Education that will enhance the students' preparation for a lifetime of continuous learning. It is our philosophy that the responsibility for that learning is shared by teachers, students, and parents.
>
> As each student is an individual with needs, abilities, goals, interests and responsibilities, our staff will work towards becoming facilitators of learning rather than dispensers of knowledge. The faculty will also provide an appropriate program to meet the needs of each student within the constraints of time, resources, teaching abilities, and subject expertise.
>
> A basic achievement for each student is to attain a high school diploma prior to his/her leaving school.
>
> In the process of attaining this diploma, we would hope that . . . students would also grow in terms of citizenship and moral integrity. The majority of students graduating from our school will continue their education in post-secondary institutions. In addition, the majority of them will be equipped to handle responsible roles in society. (Staff Handbook 1985)

The School offered a wide variety of credit courses for Grades 10, 11, and 12, including courses for the academically superior and the non-academic student. Courses were taught on both a semestered (five month) and full-year (ten month) basis.

In the 1992-93 school year, staff included three administrators (principal and two assistant principals), sixty-nine teachers, thirteen support staff, and thirteen custodial staff. For purposes of administration and supervision, subject areas were divided into eight departments, coordinated by department heads.

The educational programs of the school were developed within the framework provided by Alberta Education and the public school district in which the school was located. In a position paper adopted by the Legislature of the Province of Alberta in 1978, the goals of basic education were separated into goals of schooling and broader goals of education. The "Goals of Schooling" formed the basis of all programs and activities that occurred within the school.

> Schooling, as part of education, accepts primary and distinctive responsibility for specific goals basic to the broader goals of education. Programs and activities shall be planned, taught and evaluated on the basis of these specific goals in order that students:
>
> - Develop competencies in reading, writing, speaking, listening and viewing.
> - Acquire basic knowledge and develop skills and attitudes in mathematics, the practical and fine arts, the sciences, and the social studies (including history and geography), with appropriate local, national, and international emphasis in each.
> - **Develop the learning skills of finding, organizing, analyzing, and applying information in a constructive and objective manner.** [Emphasis added]
> - Acquire knowledge and develop skills, attitudes and habits which contribute to physical, mental and social well-being.
> - Develop an understanding of the meaning, responsibilities, and benefits of active citizenship at the local, national and international levels.
> - Acquire knowledge and develop skills, attitudes, and habits required to respond to the opportunities and expectations of the world of work. (Alberta Education 1978)

The public school district, administered by a board of nine elected trustees, provided a second layer of policies and goals that influenced educational programs at the school level. The board of trustees was responsible and accountable to the public for the results achieved in the public school system. In fulfilling that responsibility, the board had a duty, within the framework provided by "The Goals of Schooling" and "The Goals

of Education," to determine direction, provide resources, and monitor and evaluate the results achieved. Schools developed their budget plans based on priorities which were set every three years by the board of trustees. The following district priorities were established for the 1990-93 period:

- to improve student achievement and self-esteem
- to support the partnership of the home and the school in the development of students
- to improve the continuity of instruction
- to improve the quality and timeliness of services provided to students, staff, parents, and the community
- to enhance employee effectiveness and satisfaction, and encourage participation in the decision-making process
- to increase community support for, and emphasize involvement in, public education
- to emphasize the responsibilities of social agencies to children
- to increase staff and student understanding and commitment to the environment
- to improve the retention and regular attendance of students in classes (School Budgeting Manual January 1992)

The programs and activities of the school were also affected by the current climate of severe economic restraint in the Province. Reductions in transfer payments from the federal government, reductions in grants from the provincial government, and a commitment by the school board to hold the line on local taxes, combined with the ever-increasing costs of education, created a situation in which all the schools in the district were being forced to adopt cost-cutting measures and make some difficult choices concerning the types of services and programs that would be offered to students.

II. The Library

A. The Physical Plant

The library was located on the second floor of the school in the central wing. It was a long, narrow room, crowded with tables and shelves. Furniture and fixtures were

old and somewhat unmatched. However, the bank of windows on the west side of the room added to the light in the room and reduced the cramped feeling. The arrangement of the resources and tables in the main part of the library resembled that of an informal classroom. Work stations were grouped around an extensive centrally-located reference collection. The rest of the library resources were located on the periphery of room. The focus of the activity at all times was in the central part of the library where small groups of students worked together, in close proximity to the reference resources and access tools.

The library was open to students and staff from 7:30 A.M. to 3:30 P.M. Classes began at 8:05 A.M. and ended at 2:50 P.M. The Teacher-Librarian described the access as being very open and flexible.

> Access-wise, it's [school library] never closed. Students have access to it even though classes may be booked. I'm not so sure that's a good idea, for the classes, but it is a very wide open access. (Teacher-Librarian Interview I)

B. The Staff

The school library was staffed by a full-time teacher-librarian and a full-time library technician. Both the Teacher-Librarian and the Technician had over twenty years of experience in schools and school libraries. The Teacher-Librarian assumed the position of chief librarian at this school in 1990. The library also had a limited number of work experience students and some volunteer help from time to time.

C. The Collection

The holdings of the school library as of June 1993 were as follows:

Kits-Audiovisual - 450
Video tapes - 225
Magazine subscriptions - 80
Reference collection - 3500 titles
Non-fiction collection - 19000 titles
Non-fiction collection (oversized) - 1000 titles
Fiction hardback - 1500 titles
Fiction paperback - 1500 titles

(Overview of HOLDINGS June 24, 1993)

In an overall assessment, the Teacher-Librarian rated the collection as good.

> Generally, I think it's quite a good collection based on the curriculum and the instructional needs of the curriculum. . . . Generally, the collection has been

> chosen to meet the needs of the instructional program, and I think it's quite good. (Teacher-Librarian Interview I)

The Teacher-Librarian described the collection as being fairly traditional in format, with the majority of the resources available in the print format. "Our print material is far better than our non-print material" (Teacher-Librarian Interview I). The collection was described as being relatively low in online and automated resources.

> Our online resources, in this library, are very limited in that we have one CD-ROM. . . . The software for that CD-ROM includes Grolier Encyclopedia, Microsoft Books, . . . PC Globe. (Teacher-Librarian Interview I)

The collection had been barcoded for security purposes but the library catalogue was not automated.

> We have a card catalogue . . . great access tools for magazines: specifically National Geographic Index, Canadian Index, Scientific American Index. Those indexes are good and useful. They would be better if they were online, I suppose. I'm not sure, whether that's better or easier or whether more people will use them . . . probably be easier for some students if they were online. I think those [current access tools] are quite good. (Teacher-Librarian Interview I)

D. The Mission Statement

The mission of the library was "to help students make meaning from information" (Library Report June 15, 1992).

E. Goals of the Library

The Teacher-Librarian had set three major goals for 1992-93:

- to work on increasing cooperative planning with teachers in order to get teachers teaching the research process on a consistent basis;
- to update the video collection; and
- to market the library, particularly to encourage the teachers to use the library.

F. Collection Development Policy

The library did not have a written policy but the Teacher-Librarian, who was responsible for collection development, was very clear on collection development policy. Collection development decisions were based on the needs of the curriculum and on the

"ability and interests and maturity of the students in the school" (Teacher-Librarian Interview I). In order to meet curriculum needs for current information, the Teacher-Librarian had chosen to maintain a large number of periodicals and an extensive up-to-date reference section. The hardback fiction section of the collection was gradually being replaced by a relatively small collection of paperback fiction that was geared toward student interest. In long-range plans for collection development, the Teacher-Librarian proposed to expand online resources and eventually to automate the library.

> I was hoping, and am still hoping, to purchase another CD, but what I'd like to see happen is that those CD's will be networked so that we can use them in classrooms and then really get the information to more and more students. I really would like to get magazines online. I think that would be a good way to go in the future, when we get the hardware to be able to do that. (Teacher-Librarian Interview I)

Budget constraints had caused the automation process to be delayed for at least one year. The Teacher-Librarian described the 1992-93 budget as a maintenance budget. However, the Teacher-Librarian had been forced to select some priorities for collection development.

> My reference collection would be a priority, and that part of the collection . . . that is necessary in order for us to continue with research has to be a priority. That's the maintenance part of collection that I want–have to–maintain . . . to maintain the program. (Teacher-Librarian Interview I)

G. Selection Policy

The library did not have a written selection policy but, once again, the Teacher-Librarian was able to describe the selection policy very clearly. The Teacher-Librarian was aware of school district policies and worked within those guidelines. In the school library, all materials were chosen to meet the needs of the curriculum and the needs of the students and staff.

> The criteria for selecting learning resources is that it should support–be consistent--with the general educational goals of the Province, the District, the aims and objectives of the specific [school] courses. We want those resources to meet high standards in quality and content and presentation. . . . The resources should be appropriate for the subject area, for the age of the clientele, for their learning styles . . . their social development . . . have aesthetic, literary, and social value. . . . The physical format should be suitable for their use . . . designed to help them [the students] gain an awareness of Canada's pluralistic society, women's contribution, and the contribution of ethnic and minority groups. (Teacher-Librarian Interview I)

In addition, the Teacher-Librarian described specific policies to deal with gifts, weeding, and controversial materials.

In the actual selection process, the Teacher-Librarian made extensive use of learning resource reviews found in curriculum booklists, and periodicals such as Canadian Materials, and Science News. The Teacher-Librarian also attended as many relevant book displays and sales as possible.

H. Library Programs and Activities

The programs and activities of the library, like those of the school, were developed within the guidelines set by Alberta Education and the school district. Alberta Education funded school library programs through School Foundation Program Funds, but the development, implementation and assessment of school library programs was the responsibility of local school jurisdictions. The public school district was decentralized in organization. This meant that the school library was a unique reflection of the school in which it was located. Final decisions for library budgets were made at the school level. Administrative support was crucial to the development of the school library.

Alberta Education published its first school library policy in 1984:

> Students in Alberta schools should have access to an effective school library program integrated with instructional programs to provide improved opportunities for student achievement of the Goals of Basic Education for Alberta. (Policy, Guidelines, Procedures and Standards for School Libraries in Alberta 1984, 2)

In the same document, Alberta Education recommended minimum standards for program development, library staff, library collection, facilities, and staff (see Appendix B: The School Library Collection). In the area of staffing, Alberta Education Guidelines recommended 1.5-2.0 full-time teacher-librarians and 2.5-3.0 full-time technical/clerical support staff for schools with enrolments over one thousand students. However, according to a School District Consultant, in the past fifteen years an increasing number of school libraries in the School District have been staffed with fewer full-time teacher-librarians and more library technicians and support staff (often without any school library training). A recent study by the School Board found that, although the student enrolment had increased in the 1980s, the number of teacher-librarians (full-time equivalency) in the School District had decreased. In 1979-80 the School District had a total of 165 schools and 100 teacher-librarians (full-time equivalency). In 1989-90 the number of schools had

increased to 191, while the number of teacher-librarians (full-time equivalency) had fallen to 80 (School District Library Consultant Interview).

In 1985 an integrated program model for school libraries (Focus on Learning) was developed by Alberta Education, once again only as a guideline, not as a mandate. Teaching Thinking (Alberta Education 1990b) presented the rationale and guidelines for teaching the critical thinking skills necessary to process information efficiently. A fourth document, a guide to developing students' research skills, was published by Alberta Education in 1990 (Focus on Research). It introduced a resource-based research model designed to teach students how to manage information and gain transferable skills.

Library programs and activities were also affected by policies and guidelines set by the school district. The public school system had named six essential learning outcomes for all student programs:

- Students develop and use effective forms of communication in varied situations.
- Students participate responsibly in their local, national, and world communities.
- Students understand, appreciate, and use the skills necessary to maintain and be responsible for their well-being.
- **Students process and understand the information acquired through courses of study and other school experiences and apply this knowledge meaningfully.** [Emphasis added]
- **Students develop inquiry strategies to enhance learning throughout life.** [Emphasis added]
- Students appreciate varied aesthetic experiences. (Framework for Planning Student Programs 1990)

The public school system had also published a handbook for school learning resource services (1985) and a staff resource book to aid in the assessment of school libraries (1991). However, the handbook did not have official sanction and was now considered to be out-of-date (Public School District Library Consultant Interview).

Library program development at the school level was done in conjunction with the other departments and the administrators. The Teacher-Librarian reported directly to the Principal and it was the strong support of the Principal that ensured that the school

library and its programs were a vital component of the educational process in the school. "We have an administrator [principal] who is very pro-library . . ." (Teacher-Librarian Interview I). The open communication lines between the Teacher-Librarian and the Principal had ensured administration support for the adoption of the program models presented in Focus on Learning and Focus on Research.

III. The Research Assignments

The case study consisted of the investigation and description of six curriculum-based student research projects, assigned to a total of eleven high school classes (see Table 4.1). Each of the six student projects was administered by a different teacher who agreed to work cooperatively with the Teacher-Librarian in the planning and implementation of a course-based student research assignment to be completed within the specified time frame (April-June 1992). The amount of cooperation between the Teacher-Librarian and the teacher was not specified. All of the teachers did at least some cooperative planning with the Teacher-Librarian; some of the teachers involved the Teacher-Librarian in the teaching and evaluation components of the student assignment as well.

The six assignments all required similar types of research by the students. English students researched topics related to science and nature, to racism and discrimination, and to medieval culture and mindset. These topics were chosen by the teachers to fit the classroom curriculum. The Program of Studies for English 10, as developed by Alberta Education, does not list any specific titles or topics that must be studied within a particular course. Social Studies students investigated global issues and global development. Biology students explored the interrelationships of ecology/biology, technology and society. The topics researched by Social Studies and Biology students were prescribed components of the Programs of Studies in these two subjects as defined by Alberta Education.

A. Student Research Assignment 1

"Encounters with Nature" was assigned to two English 13 classes by Teacher R (see Appendix C: Student Assignments, Assignment 1). The assignment was one that had been used in previous years by the Teacher. Both the Teacher and the Teacher-Librarian

were familiar with the assignment and the resource requirements. Students were allowed to select their own topic within the general theme.

> It's a theme project, based on the idea of encounters with nature and they had to pick out a topic that was related to either animals or do some other scientific topic which was more general. . . . I had a list of topics that they could pick from . . . if they were stuck for a topic. (Teacher R Interview)

The Teacher described the assignment as very structured in nature. As far as the research objectives of the assignment were concerned, students were to be made aware of various information sources, both within and outside the school library. The role of the Teacher-Librarian was to assist students in identifying available resources and show them how to locate the resources.

> [The Teacher-Librarian] assisted with the setting up of the project–putting out sample books that might be used for the different topics. . . . [The Teacher-Librarian] also talked about where information would be found. . . . [The Teacher-Librarian] gave a review with additional information about some of the resources that might be used specific to this assignment. (Teacher R Interview)

The Focus Model was not taught in a formal direct way. More emphasis was placed on the products of the assignment. Students were expected to choose a topic relatively quickly and start on information retrieval. Source and pathfinder techniques were used to help students locate information. The Teacher and the Teacher-Librarian were available in the library to ensure that students located all appropriate information sources. The Teacher described the information gathering process as proceeding through a checklist.

The steps in information processing and sharing were highly structured by the Teacher. The Teacher identified organization as an area of weakness for the students. Both the oral presentation and written paper had specific requirements.

> One of the things that I am trying to get at here is organization and trying to make it a little more obvious what organization is or how you would put something together. With this particular group, English 13, you pretty much have to make the organization obvious for them so they can do it. . . . I find that they are released then to concentrate on the content and such things as how they put the information across. (Teacher R Interview)

The information sharing stage was given considerable importance in the assignment. I observed in the classes for some of the oral presentations. Appropriate audience behaviour was expected at all times. The Teacher's comments were consistently positive and served as a model for the exchanges between the class and the presenters. Oral

presentations were evaluated using a checklist developed by peers and the Teacher. Written reports were evaluated by the Teacher. Several of the students did not complete the information sharing part of the assignment.

The Teacher described the project as successful. According to the Teacher, the students who did complete the assignment showed considerable improvement over the previous two research assignments in the course. The Teacher emphasized that the information retrieval stage was of benefit even to those who did not complete the assignment.

> This is why I spend at least three times with these particular people who are fairly insecure anyway, at the best of times, demystifying the library . . . with the idea that maybe knowledge is power and maybe helping them to access this power–individual power–a little bit more. (Teacher R Interview)

The Teacher described the school library resources as "very adequate" for the assignment.

> By and large, though, this particular library is pretty good. . . . It's been around for a few decades so they have a good collection–a good basic collection. It was also stocked with a bent towards the sciences in some ways and this made it easier for students to find information about animals and sciences. (Teacher R Interview)

The Teacher noted that students obtained most of their information from books. The Teacher described the English 13 classes as a group that were in the process of developing a greater interest in books and print materials.

The English 13 project was assigned to two classes, with a total of thirty-six students. Fifty percent of the students completed and returned the parental consent and the student assent forms. Of the eighteen students who completed consent forms, seventeen completed the student questionnaires and five completed the Bibliography Sheets. Attendance in the two classes tended to be inconsistent and sporadic. This contributed to the difficulty of collecting the consents, the questionnaires and the bibliographies.

B. Student Research Assignment 2

The research project on To Kill a Mockingbird was assigned to two English 10 classes by Teacher S (see Appendix C: Student Assignments, Assignment 2). The assignment was a new one, developed in planning sessions with the Teacher and

Teacher-Librarian. The time frame for the assignment was relatively short as compared to the other assignments, with only three periods of class time (240 minutes) in the library. The student assignment sheets were comprehensive and included suggestions for topics, product ideas, a student planning guide (from Focus on Research), a research activity unit plan (from Focus on Research), a peer evaluation form for oral presentations (from Focus on Research), a student self-evaluation form (from Focus on Research), a short summary of the novel To Kill a Mockingbird, and a set of discussion questions on the novel. The purpose of the project, according to the Teacher, was first to give the students a chance to examine segregation or discrimination issues in greater depth and/or to study the context in which the novel was written, and second to have the students improve their research skills (Teacher S Interview). The written assignment listed the following objectives:

1. To plan for research;
2. To practice reading, writing, notetaking, organizing, and presenting skills;
3. To introduce students to the background of the novel; and
4. To give students the opportunity to do a self evaluation and a peer evaluation. (Student Assignment 2)

The Focus on Research Model was not taught directly to the students but students were expected to use the research activity unit plan that was included in the assignment sheets. The Teacher was aware of the Focus Model and considered the research process to be important, but preferred to teach the process in an indirect manner. The Teacher described the planning stage as an important part of the project for students.

> I guess, through some of the material that I gave them [students], I asked them to look into how they were going to do their planning, and planning would be an important part of the process. So, I encouraged them to hasten their choice of a topic, so that they would have more time in which to glean some useful information from the sources available in the library. . . . I asked them to establish a topic quickly–take 10 minutes to establish a topic now. (Teacher S Interview)

According to the Teacher, information retrieval activity occurred primarily in the library, with the Teacher available to help students locate resources and utilize all potential sources of information. Most of the information processing occurred at home without

direct guidance from the Teacher.

> The collection occurred in the library but the information processing is really their [students'] thing. . . . They do that at home. (Teacher S Interview)

The information sharing requirement of the assignment consisted of an oral presentation, evaluated by both peers and Teacher. The Teacher required students to hand in their oral presentation notes, but it was the presentation that was evaluated. Relatively little time was given for review at the end of each stage of the research process; it consisted of briefly checking to see if students had enough information to complete their information sharing product. Although the assignment sheet provided a very detailed research plan, teacher intervention was kept to a minimum. Students were required to have their topics approved in the early planning stages but were expected to follow the written activity plan and to do much of the information processing on their own.

The Teacher identified two major strengths of the assignment: relevance to the classroom curriculum and the opportunity for students to do an oral presentation. The Teacher valued the assignment for the background knowledge that the students shared in the oral presentations. Content that related to the chosen novel was considered to be very important.

> I was really happy, actually, with the overall outcome. . . . The students chose a wide variety of topics and they had a lot of information to share. They had the opportunity to delve in-depth into one aspect of the issue we were dealing with. (Teacher S Interview)

The two main weaknesses, according to the Teacher, were lack of time and lack of use of outside information resources by students. In terms of the library resources, the Teacher expressed a need for better access to more updated materials in other libraries. The Teacher was especially interested in the potential for developing information networks that students could use.

> Well, there are things available that I'm aware of that we could . . . such as even having a modem computer, that we could have access to other libraries. That we could be hooked in a network–into a whole vast network of information. (Teacher S Interview)

The Teacher emphasized that there was no intent to criticize the current library resources or the work of the Teacher-Librarian. However, students needed access to alternate sources of information.

> I realize there's an annual subscription fee for that [hook-up to a network], but there's certain choices that have to be gone through in order to do that, but I'd think that would really add true power to our library. (Teacher S Interview)

The English 10 project on To Kill a Mockingbird was assigned to two classes, with a total of fifty-four students. I collected twenty signed parental consent/student assent forms, eighteen student questionnaires, and eleven bibliographies. The Teacher cited time constraints relative to end of year deadlines as part of the reason for the relatively low participation rate.

C. Student Research Assignment 3

The Medieval Epics project was assigned to one English 10AC (Academic Challenge) class by Teacher T. The assignment was developed by the Teacher as an extension of the classroom curriculum. In the English program for the academically superior students, one of the goals is to give the students a background in English literature up to the time of Shakespeare.

> What we're trying to do is build up some kind of experiential base so that they [students] are aware of the roots of western culture. (Teacher T Interview)

The objectives of the assignment were to take students beyond straight recall and understanding of the basic stories.

> What I was asking them to do was to find out what people thought . . . what kinds of ideas or values that people held to be important by reading into, or, if you like, I suppose reading out of . . . what happens in those particular epics . . . some kind of a generalization about what medieval people were like. (Teacher T Interview)

Another objective of the assignment was the development of general research skills, with an emphasis on effective retrieval and processing of information.

The Focus Model of research was not taught in a direct manner to the students although the Teacher said that most of the steps were covered in an informal manner. Several years of teaching experience had convinced the Teacher that introduction of theoretical models to students is ineffective.

> If you want to mention the theory, you talk about the theory while you are part way through the process rather than introducing theory first and then trying to apply it. (Teacher T Interview)

The Teacher described the research project as different from other projects

because the topic was so specific. The Teacher focused on the depth and breadth of understanding of the medieval "mindset" that students derived from the research. The planning stage, to a large extent, was done by the Teacher, with some help from the Teacher-Librarian. The Teacher decided what epics were to be researched, partly based on what was available, but primarily based on background knowledge objectives. Each student group was given a series of research questions to answer through studying the assigned epic. In the planning stage each group was instructed to divide the work load and decide how to most efficiently use the allotted time. The Teacher and the Teacher-Librarian identified the information sources together.

> Identifying the information sources . . . [Teacher-Librarian] and I did that chiefly on our own because we wanted to be as effective with time as we could. . . . We pulled things from the general collection--scanned our general references . . . flagged passages within it. (Teacher T Interview)

They determined that there was not enough material in the library for the assignment, so more books were purchased from local book stores to supplement the school library collection. The Teacher also went out to public library branches and borrowed additional relevant materials to be used by students. Thus, in the information retrieval stage, the students worked from a pre-selected base of materials.

> So there was a guaranteed core which they didn't have to find themselves, and then some students, who were more interested in the offshoots than others, I sent off into art history or into architectural history, or mentioned we had a book on medieval honour. (Teacher T Interview)

The Teacher described the information retrieval and processing stages as closely linked and cyclical in nature, especially for the more mature students who processed and evaluated pieces of information as they consulted the information sources. Students who were weaker in academic ability spent more time on the information retrieval and less on information processing.

The research assignment was evaluated in terms of the products of the information sharing stage. There was no assessment of the process, other than that of group effectiveness, which was done by the students. Students completed oral group presentations of at least thirty minutes in length. I was present in the classroom for some of the presentations. During the observed presentations, the greatest amount of time was devoted to oral summaries of the assigned epics. The oral presentations and the group

ballads were evaluated by the Teacher.

The Teacher expressed some dissatisfaction with the results of the student assignment, specifically in terms of the knowledge that the students acquired.

> The assignment met my objectives. The students' products didn't. . . . Next year, I will probably give more time for the research project, but I will also give them more specific questions that ask them to demonstrate how their epic is a logical outgrowth of the medieval mindset. We were, in one sense, doing this as a sort of pilot run, and I don't think that for most of the students we were able to pull enough out of the medieval existence from the level of work that they did. (Teacher T Interview)

However, the Teacher felt that the assignment was successful in helping students become familiar with a form of literature that was previously unknown to them. The Teacher described a number of modifications that would be incorporated into the assignment for future use. Some of the sub-topics that would be added included military strategy, feudal structure, role of the church, and medieval manuscript illumination.

In the area of library resources, the Teacher described the collection as inadequate to meet the needs of the assignment, even after the purchase of some related materials prior to the beginning of the student projects. However, the lack of resources was not to be interpreted as a complaint against the school library or the Teacher-Librarian.

> To really do what we're expected to do, by definition of the provincial curriculum, we need a library with three times the resources that we have. Our librarians have worked very hard at building a collection, but with the limited amount of money that we have available to do it, we just can't cover everything, and we do the best we can. (Teacher T Interview)

The Teacher suggested that students would be able to experience a more realistic research process if the school library collection could provide material for every aspect of the assignment. Then the sources could remain on the shelves. However, the Teacher also cited time constraints as another factor in causing the simplification of the information retrieval process for students. In order to cover the content material in the course, the Teacher was concerned about efficiency in making information accessible to students.

> I think it's more cost effective to pull all of the main sources. . . . We're not really reducing anybody else's research opportunities, and it just means set-up of the primary resources. (Teacher T Interview)

The English 10AC research assignment was completed by a class of twenty-three students. Students worked in groups of four but were asked to submit individual bibliographies. Therefore, for the purposes of this study, the class was treated as if it were composed of individual work units. Parental consents and student assents were completed by twelve students. Student questionnaires were completed by eleven students. Only four bibliography sheets were submitted by the students who had initially agreed to participate in the study.

D. Student Research Assignment 4

A research project on global development was assigned to one Social Studies 20 class by a supply (substitute) teacher (Teacher W). The Teacher, an experienced educator with a specialty in senior Social Studies, spent almost forty percent of the school year with this particular class. Therefore, the relationship between the Teacher and the students was not short-term or casual in nature. The assignment was developed jointly by the Teacher-Librarian and the Teacher. The Teacher-Librarian served in a cooperative capacity during parts of the project. Most of the student work occurred in the library, except for the oral presentations which were held in the classroom. A relatively extensive description of the requirements of the assignment was distributed to each student (see Appendix C: Student Assignments, Assignment 4). Students were allowed to choose their partners and topic (from a prepared list of twelve topics), subject to approval of the Teacher. Duplication of topics was not allowed. The procedure section of the assignment was arranged and labelled according to the stages of the Focus Model. In the information processing section, students were provided with a set of six research questions.

The Teacher identified three basic objectives of the project:

- to do a thorough research in order to identify specific roles of development of particular countries;
- to gain experience in research and information evaluation, including specific skills of collecting information, keeping track of sources, using a retrieval chart, presenting an oral report; and
- to practice working cooperatively and sharing information with another student. (Teacher W Interview)

An additional objective that the Teacher emphasized throughout all stages of the assignment was that of encouraging students to develop critical thinking and information evaluation skills. Students were challenged to identify information sources as being primary or secondary, as well as to be constantly aware of the biases and perspectives of the sources.

> I expect students to be critical–not negative, but critical–in their assessment of that information. . . . As an instructor you want the students to realize that every piece of information that's being retrieved and processed . . . there needs to be some sort of evaluation. . . . How does it allow us to understand, or at least balance other information that you've already accessed? (Teacher W Interview)

Although students were not directly introduced to the Focus Model, the students were given a copy of the stages of the Model for guidance through the assignment. The Teacher believed that there should be as much emphasis on critical thinking and the information search process as on the curriculum content in the written and oral products of the information sharing stage. It was the Teacher's expectation that the research process would bring about changes in the student's attitude and thinking about a particular topic.

> As an educator . . . it's my responsibility to at least have an understanding of what changes may be in the thinking–or in the process of thinking–that these students have gone under in the time of accessing this information. What changes in perspective have come about because of that information? (Teacher W Interview)

Much of the planning stage was completed by the Teacher and Teacher-Librarian who provided a limited list of topics and determined the evaluation criteria for the assignment. Each group was expected to identify available information sources. Students were encouraged to go beyond the school library to look for current information. Students used at least eighty minutes to identify potential information sources and plan how to distribute the workload. Information retrieval and processing occurred concurrently as students located and evaluated pieces of information. The Teacher expected information sharing to occur within the groups at all stages of the research process. In the evaluation stage, oral presentations were assessed primarily by the Teacher and students in the class. Written reports were evaluated by the Teacher and Teacher-Librarian. Students were also required to complete a group effectiveness appraisal and a self-appraisal.

The Teacher assessed the research project as being generally effective in meeting the objectives listed in the written assignment. However, the Teacher identified a general weakness in the area of critical thinking on the part of high school students that seriously affected the effectiveness of this research project and all other research projects completed by students at the high school level.

> One of the drawbacks is that students, as a whole, do not–or have not–developed critical thinking skills. Students do not know how to adequately research information. (Teacher W Interview)

The Teacher planned to use the assignment in future classes but would increase the time allotted to the assignment to give students more opportunity for in-depth research. Future assignments would also require students to keep a diary or journal of daily activities to make them more aware of the research process.

> I think I would spend more time going through each stage [of the research process] and elaborating . . . the importance of each stage for the students so that they're very clear as to what's being attempted–what the focus is. (Teacher W Interview)

Students would be expected to keep a record of what sources were consulted each day, plus complete an evaluation of all information sources. The Teacher would emphasize in a more direct manner that the information-seeking process is not something that occurs only in class assignments, but that it should be a daily activity for everyone.

The Teacher did not believe that the school library resources adequately served the information needs of the students who were completing the research assignment. The lack of resources in the library was not a reflection on the Teacher-Librarian or that particular school library. According to the Teacher, similar problems due to lack of current primary information resources occurred throughout much of the school district, and emphasized the fact that students must be taught to identify a variety of sources of information. In addition, the Teacher believed the cost of resources and problems in locating appropriate relevant materials to be limiting factors in the development of the school library collection. The information sources in the library were described as limited in nature, difficult to use, and often incomplete (secondary sources, summaries) and/or not as current as was desirable. The Teacher expressed a need for a better way of gaining access to information available outside the school library, perhaps through some type of automated network.

> We need to take a second look at how we can share information--maybe a sharing of information that goes beyond just a closed system--as a school system--going beyond that to where we have access to information we could draw from various businesses, government agencies. (Teacher W Interview)

The Teacher also expressed a need for an inter-school loan system with adequate online indexing so that students and teachers could gain access to relevant material throughout the school district.

The Global Development project was assigned to a Social Studies 20 class of twenty-five students. Students worked in pairs and submitted one set of Bibliography Sheets per group. Parental consents, student assents, student questionnaires, and bibliography sheets were completed by twelve students in the class.

E. Student Research Assignment 5

"Global Issues" was a research project assigned to two Social Studies 20 classes by Teacher X, an experienced teacher and a former teacher-librarian. The assignment was designed by the Teacher with some input from the Teacher-Librarian, primarily regarding available resources.

> We [Teacher and Teacher-Librarian] had actually about four false starts to this project, where we would get together . . . discuss various approaches and various techniques. . . . I really relied on the Teacher-Librarian for knowledge of resources in this library--what was available, what could be found, that sort of thing. (Teacher X Interview)

The assignment consisted of four sections that required students to analyze and present information in four different formats (see Appendix C: Student Assignments, Assignment 5).

The Teacher developed the project with three main objectives in mind:

- to meet course content requirements by having students gain knowledge relating to current global issues identified by the Teacher;
- to allow students to develop analytical and critical thinking skills in information retrieval and presentation; and
- to give students experience in retrieving and presenting information from other than standard sources and formats. (Teacher X Interview)

The Focus Model was not taught directly by either the Teacher or the Teacher-Librarian. The Teacher emphasized that this particular assignment was just one of a series of

research projects completed by the class during the year. Many of the research skills had been covered earlier in the course. In this particular assignment, the Teacher chose to focus on encouraging students to go beyond the card catalogue in locating materials. Students were expected to use periodical indexes and vertical files and to gather information from a variety of sources, including sources not found in the school library. The Teacher was looking for indications of critical thinking and evaluation of information in the products. A simple regurgitation of the information was not considered acceptable. Students were not asked to review or evaluate the actual information search process.

The planning stage of the process was primarily teacher-directed. The Teacher gave the students a list of twenty-nine topics from which to choose. Students were required to work on their own and duplication of topics was discouraged. Little or no time was allotted for planning. Students were expected to begin information retrieval almost immediately. The Teacher directed students to follow a pathfinder technique to locate relevant materials. They started with familiar information access tools, like the card catalogue, and traditional reference materials in the school library, including encyclopedias, and then branched out to more specific information, both within and beyond the school library. The information processing stage occurred in conjunction with the retrieval stage. The Teacher expected students to be actively analyzing sources and organizing of pieces information as they were retrieving. It was estimated that students spent about sixty percent of their time in the information retrieval and processing stages. The remaining forty percent of the time was spent on selecting appropriate formats and preparing four different products to meet the information sharing requirements of the assignment. All four products were submitted to the Teacher for evaluation. There were no oral presentations. Students were not involved in any type of evaluation of the project, although the Teacher noted that assignments earlier in the year had included student evaluation components.

The Teacher described the assignment as successful in meeting the objectives that had been established.

> The students were able to reach the content objectives–finding information they wanted, and secondly, it did get them involved in a number of different skills both at the research and at the information presentation section. (Teacher X Interview)

The project's strength, according to the Teacher, was that it allowed students to gain experience with a variety of research techniques and a variety of presentation formats. The Teacher noted that it would be difficult to assess the learning transfer skills gained by the students. Although the Teacher would use the assignment again, it would be supplemented with more general class instruction on the use of periodical indexes like the Readers' Guide.

According to the Teacher, the school library collection did not adequately meet the information needs of the students.

> I don't think school libraries can really meet the demands . . . The books and magazines have become enormously expensive. . . . I don't think this is a case where we can do more with less as they keep claiming. . . . I don't think they can expect school libraries to meet the needs of kids without money–that's just the bottom line. They come here for resources, and resources cost money. (Teacher X Interview)

The online resources of the library were also judged to be lacking. The Teacher expressed concern that students in this particular school did not have the opportunity to gain access to the most current information, nor did they develop skills in using the technical equipment that many of them would encounter in the future in post-secondary institutions. The Teacher emphasized that the weaknesses of the collection and the school library were not to be taken as a criticism of the Teacher-Librarian. In the Teacher's judgment, teacher-librarians are doing the best they can with limited resources. One of the solutions suggested was to teach students to locate information available outside the school library.

> It's become increasingly clear in the last few years, that students have to go beyond the school to find material that they need. They cannot depend on the school's library or the classroom to get all the material they need. It's just not available. (Teacher X Interview)

The "Global Issues" project was assigned to fifty-five Social Studies 20 students. Students were required to work as individuals. Consent forms were completed by thirty-three students, student questionnaires by thirty-one students, and Bibliography Sheets by seventeen students.

F. Student Research Assignment 6

An ecology project was assigned as a course culmination activity to three classes of Biology 20 students. It was a new assignment, designed by Teacher Y, with the assistance of the Teacher-Librarian (see Appendix C: Student Assignments, Assignment 6). Students were assigned to groups consisting of five or six members. The Teacher also assigned a general topic to each group. The Teacher viewed the project as a way of helping students become familiar with current ecological problems in a manner that would be more effective than simply providing information through classroom lectures. The objectives of the project were as follows:

- to develop an understanding of the interrelationships of ecology/biology, technology and society;
- to practise the skills associated with research and inquiry;
- to prepare students to make responsible decisions regarding science related social issues;
- to learn to look at an issue from more than one perspective;
- to practise working cooperatively in a group; and
- to start using a personal response journal in biology. (Ecology Project - Written Handout)

The Teacher hoped that students would gain experience in the library that would lay the groundwork for lifelong use of the library and other information resources. The Focus Model was not taught in a direct manner but the Teacher and Teacher-Librarian did guide student groups in the research process as they worked through the project. Forms for group effectiveness appraisal and student self-evaluation were adapted from Focus on Research. This assignment placed considerable emphasis on the research process. In order to fulfil the requirements of the assignment, students were expected to write a daily description and review of their progress through the stages of the research process in their personal journals. They were also required to complete self and group evaluations. Approximately fifty percent of the student's final mark on the assignment was an evaluation of the degree of success of the research process followed by the student. The other fifty percent of the mark was an evaluation of the research group's oral presentation and final written summary.

The planning done by the student groups was considered to be crucial to the success of their projects. Groups were expected to develop a focus and a series of research questions. The Teacher noted that planning took at least one day (160 minutes) in the library and often longer. Students started with general sources and used them to become familiar with the broad topic. Often information retrieval and planning were combined as the topic became more specific and students attempted to develop and answer their research questions. The Teacher-Librarian played a major role in helping students to focus and utilize appropriate information sources.

> I think the information retrieval would be–was part of the actual planning process. . . . Most often I directed them [students] to the Teacher-Librarian, who went from group to group and discussed what they were looking for. (Teacher Y Interview)

Information processing occurred throughout the whole project, according to the Teacher. Students were expected to be selecting and evaluating information, recognizing perspectives and biases, and applying information to new situations and points of view throughout the assignment. Information sharing occurred within the research groups, during the oral presentations, and within the focus groups where students were assigned specific roles and points of view. The same was true of the evaluation section of the project. Students were required to do daily evaluations of their progress in the research process as well as evaluations in each of the discussion groups.

> For evaluation, that was an ongoing thing. Right from the day the presentations started, until the very last day, they were being evaluated by their peers and by their teacher and by their librarian. Plus, they were evaluating themselves through continual use of their journal. (Teacher Y Interview)

The Teacher described the research process as an iterative procedure rather than one that consisted of neatly separated stages. The assignment was carefully structured and sequenced in advance, but the Teacher chose not to take an active role in the group work or the presentations. Individual groups were given the freedom and flexibility to approach problems in very different ways.

The Teacher considered the assignment to be successful in meeting the assignment objectives. The curricular objective of giving students the opportunity to become acquainted with ecological problems was met very successfully, in the opinion of the Teacher. In addition, some students who did not previously see the library as useful commented in their journals that some of what they had learned could also be applied in

their Social Studies class. One of the strengths of the project, according to the Teacher, was the success of the groups in working together to locate and process information.

> Even the weaker students, in their journals that I've been reading, indicated the value of learning with their peers. . . . They have to be able to learn to make use of the resources available to them and often to work as a group in finding information. (Teacher Y Interview)

In addition, students felt a responsibility to the group. Peer pressure resulted in better attendance and participation. The Teacher suggested that the group work also highlighted one of the major problems of the assignment. Some students did not assume their share of the workload. This caused considerable resentment by students who wanted good marks. The Teacher planned to use parts of the assignment in the future but noted that some changes would be necessary to accommodate new curriculum requirements. In addition, the Teacher wanted to try to incorporate some cross-curriculum components into future projects.

> I would like to maybe get together with the English Department and the Social Department and see if we can't do a little interaction of the three subjects. (Teacher Y Interview)

The Teacher described the school library resources as adequate to meet the needs of the assignment. According to the Teacher, it was not necessary for students to go beyond the school library to gain access to appropriate information, although the format of information in the school library was generally limited to print materials.

> I would have liked to have seen a little more, maybe, audio-visual materials available to them [students], but they had ample resources in magazines and current scientific journals and things like that, so I think most everything we needed was here. (Teacher Y Interview)

The ecology project was completed by a total of seventy-two students working in fourteen groups. Consent forms and student questionnaires were completed by fourteen students. Group Bibliography Sheets were collected from thirteen of the fourteen groups.

Table 4.1

STUDENT RESEARCH ASSIGNMENTS

Research Assignment	Subject	Starting Date	Completion Date	Class Time in Library	Class Time in Classroom	# of Students per Work Unit	% of Course Mark
1 Encounters with Nature	English 13	May 1	May 30	2 periods*	3 periods*	1	5
2 To Kill a Mockingbird	English 10	May 17	June 9	3 periods*	1 period*	1	5
3 Medieval Epics	English 10AC	April 23	May 25	4 periods*	2 periods*	4	12 - 15
4 Global Development	Social Studies 20	April 26	June 3	5 periods*	0 periods*	2	5
5 Global Issues	Social Studies 20	May 10	June 9	4 periods*	1 period*	1	12 - 15
6 Ecology Project	Biology 20	May 25	June 16	8 periods*	1 period*	5 - 6	7 - 10

*1 class period = 80 minutes

Chapter 5

FINDINGS AND ANALYSIS

I. Introduction

The purpose of this chapter is to outline and describe some of the patterns and relationships that have been identified through analysis of the data gathered in the study. The principle of triangulation has been applied throughout the data gathering and analysis stages of the study. Data and conclusions based on the data were consistently verified by cross-checking several different sources of information, using methods of data analysis appropriate to the type of data being studied. In addition to detailed field observation notes compiled throughout the study, I examined documents (both historical and current) produced by Alberta Education, the local School Board, and the school in which the research site was located. Other major sources of data were formal interviews and informal conversations, primarily with the key informants. Additional data were obtained from teacher and student questionnaires and from student bibliographies.

Level of participation in the study appeared to be influenced by grade, work unit size, and teacher expectations. Table 5.1 shows a higher participation rate for Grade 11 students, for students who worked in groups, and for students of particular teachers. Student maturity seemed to affect the level of participation in the study, at least to some degree. Grade 11 students were more willing to complete and return the consent and assent forms and were more successful in completing the Bibliography Sheets. Perhaps part of the difference between the two grades can be attributed to the differences in requirements for Grade 11 assignments as compared to Grade 10 assignments. For example, the Grade 11 teachers tended to put more emphasis on the completion of student bibliographies than did Grade 10 teachers. Some of the teachers actively supported student participation in various ways, while others were more passive in their interactions with me and the students involved in the study. Students who worked in groups were more successful in completing and submitting bibliography forms than students who worked as individuals. A higher percentage of return on the Bibliography Sheets for students working in groups might be attributed to increased peer pressure,

differing requirements of the assignment, and greater involvement of the Teacher-Librarian with the groups throughout the duration of the assignment. In all of the assignments, it appeared that the teachers had a strong influence upon the level of participation of the students, partly through expectations set in the classroom and partly through the planning and implementation of the curriculum-based student assignments.

II. Findings: Relationship Between Goals of Education and the Information Search Process

The policy to teach the information search process, to have students actively construct knowledge from information, was present at every level of the educational infrastructure, originating at the top with Alberta Education and proceeding down through the levels of the District School Board, the School, and the School Library.

At the provincial level, one of the six goals was to create programs that allowed students to:

> develop the learning skills of finding, organizing, analyzing, and applying information in a constructive and objective manner. (Alberta Education 1978)

To support these goals, Alberta Education developed policy statements, handbooks, and curriculum supplements that described how the policies should be implemented. Some of the more relevant documents were Policy, Guidelines, Procedures and Standards for School Libraries in Alberta (1984), Focus on Learning (1985), Teaching Thinking (1990b), and Focus on Research (1990a).

At the local school board level, student programs were planned and supported for the purpose of providing each student with the opportunity for successful attainment of the objectives established by Alberta Education in "Goals of Schooling." In the process of interpreting the goals of Alberta Education, the local board identified six essential learning outcomes. Two of the six outcomes referred directly to the development of proficiency in the information search process.

> Students process and understand the information acquired through courses of study and other school experiences and apply this knowledge meaningfully.
>
> Students develop inquiry strategies to enhance learning throughout life. (Framework for Planning Student Programs 1990)

At the school level, the policies of Alberta Education and the local school board were translated into action. In its statement of philosophy, the School espoused a constructivist model of learning, one that viewed students as capable of assuming responsibility for their learning experiences.

> We provide an appropriate program within the educational goals and objectives of Alberta Education that will enhance the students' preparation for a lifetime of continuous learning. . . . Our staff will work towards becoming facilitators of learning rather than dispensers of knowledge. (Student Handbook 1985)

Budgeting and resource allocation decisions made at the school level reflected the School's commitment to library programs and the teaching of the research process. The 1992-93 School Budget Plan included in its list of goals that of empowering students in the learning process and that of improving the continuity of instruction. The School administration continued to support the work of a full-time teacher-librarian when several other high schools in the district chose to reduce the number of hours of teacher-librarian staffing or even replace the teacher-librarian with a library technician with no teaching responsibilities.

It was at the level of the school library that programs to develop student skills in using information to learn and extend knowledge were developed. The Teacher-Librarian described the School Principal as being very supportive of the school library and library programs (Teacher-Librarian Interview I). The Principal valued cooperative planning and teaching, and interdepartmental library research projects (School Memorandum June 1992). Within the high school environment, where the curricular areas are traditionally rigidly separated, the Teacher-Librarian sought opportunities to develop student learning programs that cut across disciplines. For example, the Teacher-Librarian encouraged collaboration and resource sharing between the English and Social Studies departments. In all areas, the Teacher-Librarian assisted teachers in planning and implementing research assignments that enabled students to take more control of their learning experiences. It was the Teacher-Librarian who assumed responsibility for implementing the Focus Model within the School, primarily through cooperative planning and teaching opportunities. The mission of the school library was "to help students make meaning from information" and the Teacher-Librarian actively promoted the use of the Focus Model as a way of achieving that mission. The Teacher-Librarian was a strong advocate of process-based research and constantly strove to increase the base of teachers who were

willing to cooperate in the planning and development of course-based research assignments.

> I question the importance of library lessons unless they are used in context. I believe that we learn by doing and we probably spend too much time instructing rather than preparing learning strategies that allow students to process information, organize that information, and present it to their classmates in an interesting format. (Memo from Teacher-Librarian to Teachers August 1992)

Policy to support teaching of the information search process, and specifically the Focus on Research Model, was established and affirmed at every level of the educational infrastructure. However, there appeared to be no direct, simple relationship between the established policy and student learning. The study revealed many conflicting educational goals and external forces that affected the efficacy of the Focus Model within the school context. Some of these factors included budget cuts resulting in substantially lower foundation grants to the school, frequent changes in curriculum requirements, time constraints, increasingly prescriptive curriculum and evaluation standards, and a strong "back-to-the-basics" movement (Teacher and Teacher-Librarian Interviews, annual reports of the school district, school budget planning documents, teacher-librarian annual reports, library reports and memos). Each of these factors was competing for time and support within the educational context of the school and school library.

Darling-Hammond (1993) suggests there are two opposing models of policy making. One model sees schools as bureaucracies in which specified procedures will lead to standard products, specifically students with particular skills and levels of knowledge. A second view recognizes each school as a unique environment in which courses and strategies must be tailored to meet the changing needs of the student body. In order to accomplish this, there is a need to decentralize and professionalize education. Investment in the knowledge and skills of the educators, site-based management, and shared decision-making all characterize this second philosophy of policy making and implementation. The policies of Alberta Education, and particularly the policies upon which Focus on Research have been based, fall within the second view of policy development. A model for research was developed but the onus for development and implementation of the model within the school context is placed upon the teachers and teacher-librarians. It is an approach based on the philosophy of constructivism, a way of looking at learning and knowledge that rejects the positivism that has characterized

earlier stimulus-response approaches to teaching. It is assumed that students actively construct knowledge in a holistic and experiential fashion (Pitts 1992), and the construction of that knowledge is influenced by what is already known or understood.

Both the continuum of research procedures and skills, and the continuum of levels of research are flexible.

> Schools should personalize each continuum, establishing student expectations for grades or division. . . . Before developing research activities, individual teachers will decide which skills to emphasize and which levels are appropriate in certain units. Teachers may have an opportunity to develop a research activity with a teacher-librarian. (Focus on Research 1990a, 5)

Thus, teachers are given the flexibility necessary to adapt and respond on the basis of individual needs and interactions to a complex, ever-changing set of circumstances. They are expected to identify the real knowledge and experiences of their students, including their cultures, their communities, and the conditions in which they live. The empowerment of the teachers and teacher-librarians is crucial to the successful implementation of the Focus Model.

However, this study suggested that flexibility and the potential for increased decision-making at the school level was not enough. Policy makers assumed that teaching staff would change their beliefs, knowledge, and actions concerning the research process as a result of the distribution of a handbook which explained the philosophy (at a very superficial level) and described the implementation of process-based student research. This handbook was, of course, Focus on Research. There were two problems involved in the adoption and implementation of the Model, both of the problems very closely related. First, school-based innovations require support in the form of knowledge-building and capacity-building mechanisms: opportunities for staff development, investments in continuing teacher education, and other programs necessary for school change if new policies are to be implemented. Interviews showed that several of the teachers in the study were only vaguely familiar with the Focus Model. While the Teacher-Librarian was very comfortable with the Model and had even conducted workshops on its implementation within the science curriculum, a school-based workshop on the Model for teachers had never been scheduled. There had been no opportunity at the School for the development of a school-specific continuum of research stages and research levels. Curriculum demands and time constraints had resulted in very limited

opportunities for teaching staff to engage in peer coaching, team planning and teaching, and collaborative research into ways to implement the Focus Model. The development of a policy had not ensured implementation and change at the school level. Without a mandate or long-term support from Alberta Education, particularly in the areas of funding and professional development for the teaching staff, the implementation of the Focus Model was seriously hampered. Teachers in this study were willing to accept various suggestions of the Teacher-Librarian regarding the incorporation of the stages of the Focus Model into the student research assignments, but showed little knowledge of or commitment to the Model itself. The perception seemed to be that research models were part of the library program and therefore the responsibility of the Teacher-Librarian, not a school-wide innovation.

Second, the Model is built upon the assumptions of constructivism. This means that there are no packaged teaching materials. Students are not standardized and teaching is not routine. Teaching staff members are expected to be professionals who combine extensive knowledge of subject matter and a wide repertoire of teaching strategies with a comprehensive understanding of students' growth, experience, and development. Students are not expected to memorize a prescribed number of facts or concepts; rather the goal is to teach them to construct their own knowledge, to problem solve within their own personal context. Such a philosophy demands an increased emphasis on teacher education and investment in ongoing professional development. Teachers and teacher-librarians are required to solve problems, take risks, assume ownership of their teaching, and exercise leadership in their schools. Once again, the study showed a lack of support and funding at the research site to facilitate the development of such professionalism in relation to this instructional strategy. The teachers interviewed in the study did not identify any professional development activities (workshops, staff meetings, courses) that had allowed them to better understand the Focus Model or the philosophy upon which it was based. Several of the teachers cited development of critical thinking skills and evaluation of information sources as objectives in their student research assignments, but none of the teachers linked these objectives to the Focus Model.

The policy of Alberta Education as embodied in Focus on Research advocates the development of a curriculum which teaches learning as a lifelong process using a

professionally trained teaching staff with well supported learning resources, but investments of adequate resources needed to implement the policies seemed to be lacking at the school level. It appeared that the lack of concrete support by Alberta Education for the policies in Focus on Research had negatively affected the implementation of the Model at the research site. Hammond-Darling (1993) suggests that:

> . . . the responses of school practitioners to policies depend on a wide array of environmental factors including local resources, student needs, community expectations for schools, competing priorities and ideologies, and previously passed policies, many of which stand as direct or indirect obstacles to the pursuit of the intentions of new policies. (756)

Although the teachers and Teacher-Librarian appeared to agree in principle with the philosophy of process-based student research, competing priorities and demands on their time and energy combined with the lack of support needed for change caused the teachers to view the Focus Model as just one more strategy for teaching students how to locate information, rather than as an essential component of their course curriculum.

III. Findings: Relationship Between the Development and Implementation of the Research Assignments and the Information Search Process

The development and implementation of curriculum-based research assignments profoundly affected the type of information search strategies used by students in this study. Of the six student research projects that were examined, one implemented a process approach toward information use; the other five studies seemed to use more traditional source and pathfinder search strategies. Some of the factors that affected the type of information search strategies used included: time frame of student assignments, roles of the teaching staff and administration, design of the assignments, and philosophies of learning and teaching.

Kuhlthau (1993a) has identified three primary inhibitors and four basic enablers that influence the degree of success experienced in the implementation of a process approach to the teaching of information-seeking skills. The three primary inhibitors are lack of time, confusion of roles (of teachers, teacher-librarian, and administrators), and poorly designed assignments (16). The four basic enablers are a team approach to instruction, a mutually held constructivist view of learning, a shared commitment to

developing skills for lifelong learning and to empowering students to take responsibility for their learning, and competence in designing activities and strategies to improve student learning (16-17). The nature of the student assignments can be described in terms of these seven key factors.

A. Time Frame of Student Assignments

Results of the study suggested that it was not the actual length of the assignment that affected information search strategies of students, but rather the amount of time allotted to instruction in and guidance through the research process. All of the classes were given considerable time and guidance in the information retrieval stages. Only a few of the classes were allotted time for other parts of the process, including planning, focus formulation, and review of the process. Teacher Y's classes were given a substantial amount of time not only to gather information, but also to work through the stages of the search process and to reflect on actions, thoughts and feelings during the process. The students in Teacher Y's classes used a process approach; students in the other eight classes appeared to use more traditional source and pathfinder search strategies.

There was considerable variation in the amount of time allotted to the individual student research assignments. Total time from announcement of the assignment in class to the date on which all products had to be submitted to the teacher for evaluation varied from just over three weeks to just over five weeks. There was also considerable variation in the amount of class time allotted to the assignment, both in the classroom and in the library. Class time ranged from a low of four 80-minute periods (Teacher S) to a high of nine 80-minute periods (Teacher Y). Teacher Y allowed students to concentrate exclusively on the class assignment for nine periods with no classroom time being taken for other topics. In contrast, Teacher S developed an assignment of approximately the same duration (three weeks plus two days), but allotted only four periods of class time to completion of the assignment and presentation of oral reports.

According to Kuhlthau (1993a), lack of time–both student work time and planning time for team instruction–is frequently identified as a problem in the implementation of process-based research. Four of the six teachers (Teachers S, T, W, X) cited time constraints as one of their major concerns or problems in the student research

assignments. All of the students in these classes appeared to use source and pathfinder search strategies. Students were often encouraged to choose a topic quickly so that they could get to work in the library. Teacher T elected to pre-select many of the available information resources.

> We had a limited amount of time available to research. We pulled some things from the general collection, scanned our general references. We have a wonderful encyclopedia, The Middle Ages, which most schools don't have. We flagged passages in it. (Teacher T Interview)

Teacher X expressed a need for more time to be spent on student instruction in use of information access tools like The Readers' Guide and the vertical file. Although the assignment developed by Teacher W was longest in duration of any of the six assignments, the Teacher commented that students did not have enough time to locate information or to work through the stages of the research process. None of the teachers identified a lack of sufficient planning time with the Teacher-Librarian.

The six student research projects were assigned relatively late in the semester. Most of the teachers were concerned with covering the course work, preparing the students for final examinations, and coping with some uneven student attendance due to track and field and other extra-curricular spring activities. Over half the teachers cited negative influences of course deadlines and time shortages upon the research assignments.

The two teachers who did not see time constraints as a problem (Teachers R and Y) deliberately spent more time guiding their students through the research process. Teacher R explained that English 13 students require more structure and guidance in research, particularly in information processing. Teacher Y planned a carefully structured research assignment that attempted to make students aware of the research process and the stages within the process. Both teachers believed that students need extra time to work through all or parts of the research process and structured it into their assignments.

Thus, the time frame of the assignments exerted an important influence on the research process. When teachers perceived time constraints, they gave greater emphasis to information retrieval in the library and to the completion of the information sharing products, and less attention to the information search process. They perceived more traditional source and pathfinder techniques of research to be easier and less time-consuming to plan and implement. When teachers did not identify time constraints, they

seemed more willing to spend time on the research process as well as on the product. It appeared that the process approach to research was implemented in assignments in which sufficient time was allotted not only to development of an information sharing product, but also to the guided progression of the student through the entire process.

B. Roles of the Teaching Staff and Administration

Teachers participating in the study were asked to describe their roles and the role of the Teacher-Librarian during the development and implementation of the student assignments. In five of the assignments, the teachers (Teachers R, S, T, W, and X) and the Teacher-Librarian functioned primarily within traditional roles, with the teachers acting as assignment givers and the Teacher-Librarian acting as resource gatherer (Kuhlthau 1993a). Students of these five teachers appeared to be using pathfinder or source techniques of research. In classes in which the teachers formed collaborative partnerships with the Teacher-Librarian throughout the whole assignment (Teacher Y), students used a process approach to information-seeking.

Kuhlthau (1993a) has suggested that there is often some confusion over roles. Such confusion on the part of the teachers was not apparent in this study. The teachers did, however, differ as to what they believed the appropriate role of classroom teachers and the Teacher-Librarian to be. The degree to which teachers expected to utilize the knowledge and teaching expertise of the Teacher-Librarian appeared to have a direct effect upon the implementation of the process approach to research. Most of the teachers focused on the content of the information sharing products. They designed the assignment and set the primary objectives, and then consulted with the Teacher-Librarian to determine the most effective use of library resources in order to meet the objectives of the assignment. The Teacher-Librarian was expected to make suitable information resources available and assist during the information retrieval stage.

All of the teachers participated in pre-planning activities with the Teacher-Librarian. However, the pre-planning sessions varied considerably in duration and in scope. Two of the teachers (Teacher W and Y) regarded the Teacher-Librarian as a co-planner, someone with equal responsibility in the development of the assignment. Four of the teachers (Teachers R, S, T, and X) considered the Teacher-Librarian to be a resource person whose chief responsibilities included contributing ideas and making

suggestions, identifying the information resources available, and ensuring that the logistic requirements of the assignment could be met. The time spent in pre-planning varied from just a few minutes squeezed between classes to pre-arranged hour-long meetings. A far greater time commitment was required in the preliminary sessions when the Teacher-Librarian was considered a co-planner than when the Teacher-Librarian was viewed as a resource person.

The roles of the teachers and the Teacher-Librarian were also very different during the implementation of the student assignments. Only two of the six teachers (Teachers W and Y) indicated that they participated in any implementation planning meetings with the Teacher-Librarian after the assignment had been given. Both of these teachers described the responsibility for the assignment as being equally shared by the teacher and the Teacher-Librarian. One of these teachers (Teacher W) described a team teaching context; the other (Teacher Y) said that teaching duties were equally divided between the teacher and the Teacher-Librarian.

> I basically worked with the School Librarian who's taken a very active role in the learning process. . . . Well, definitely colleague in this aspect. We were working as coordinators of the learning of these students. [Teacher-Librarian] wasn't just a resource. [Teacher-Librarian] was . . . an integral part of this. (Teacher Y Interview)

Although Teacher W did seek to develop a collaborative relationship with the Teacher-Librarian in the early stages of the class project, the Teacher was unable to maintain the cooperative planning and teaching model throughout the entire project.

Four of the six teachers (Teachers R, S, T, and X) said that the primary responsibility for the planning and implementation of the assignment was assumed by the teacher. All of the teachers expected the Teacher-Librarian to assist students with location of materials within the library. One of the teachers (Teacher Y) expected the Teacher-Librarian to assume total responsibility for teaching any necessary library skills; the others assumed varying amounts of responsibility in teaching library location and research skills.

> As far as planning goes, [Teacher-Librarian] and I talked about it after I'd invented the idea. We always do a feasibility–do we have enough material in the library that we can actually make a go? We–as we always do–we just throw ideas back and forth. Primarily, I think it's my responsibility but . . . I find it very useful to bounce ideas off someone else. (Teacher T Interview)

> I really relied on the Teacher-Librarian for knowledge of resources in this library–what was available, what could be found–that kind of thing. . . . Once they [students] had chosen their particular topic, they knew what they had to do and they were coming in here [library] to do the research and were relying on [Teacher-Librarian] to help them with . . . figuring out how to use the periodical guide or finding resources or how to use this, or how to use that. (Teacher X Interview)

> The main person I worked with was the librarian who assisted with the setting up of the project–putting out sample books that might be used for the different topics. [Teacher-Librarian] also talked about where information would be found, so this was a review, but it was also a review with additional information about some of the resources that might be used specific to this assignment. So [Teacher-Librarian] was probably the main resource person that was used. (Teacher R Interview)

The Teacher-Librarian adapted roles according to the type of assignment and the expectations of the teacher. Ideally, the Teacher-Librarian aimed to work as a teaching partner throughout the student projects.

> I see my role as being a partner with all the teachers in this school. . . . I cannot see my role as being the only person who teaches literacy skills, or information processing skills, or even location skills. I think it's something that every teacher and myself are responsible for. . . . The best case scenario is that we all work together and we understand what we're doing and we communicate with one another and follow through. (Teacher-Librarian Interview II)

However, the ideal role, according to the Teacher-Librarian, was rarely achieved in actual practice, primarily because many of the teachers had no clear concept of the changing role of the Teacher-Librarian.

> They [teachers] see me as a keeper of the books or as a clerical worker who has no teaching skills and doesn't even know about teaching. . . . I always have to establish my credentials and why I'm here and how I can help them and how we can work together. . . . I always have to work on the PR of making sure that the planning and teaching goes together. So it's a balance–and it's a balance that doesn't always work. (Teacher-Librarian Interview II)

In five of the six projects, the Teacher-Librarian acted primarily as a resource person and advisor. The Teacher-Librarian was willing to meet the needs of the teachers by providing service at whatever level was expected and required, while, at the same time, seizing the opportunity to act as a catalyst in the change process. This included talking about the potential for an expanded role of the teacher-librarian and making suggestions regarding the research process and new teaching strategies. However, the

Teacher-Librarian was well aware that most teachers participating in the study were more interested in information about resources than in strategies for working through the research process.

> [Teacher T] is a very experienced teacher, who uses the library a great deal–very little of it in conjunction with the Teacher-Librarian, and what [Teacher T] wanted to do with the English 10AC was an extension of medieval literature and our resources were not . . . up to par, so we did a buying expedition to begin that one. We followed through with [Teacher T]'s enthusiasm as to what [Teacher T] wanted to do. (Teacher-Librarian Interview II!)

This does not imply that the Teacher-Librarian considered the role of manager of information resources as unimportant. One of the goals of the library was to support classroom curriculum as fully as possible.

> It was very, very important to me that there were enough resources available, so that students would not become frustrated at not being able to find what they needed in order to do what they had to do. . . . for the Social 20 projects which were [Teacher W and Teacher X], I have probably been building up that portion of the collection for the last two or three years. . . . With [Teacher T], when I found out what [Teacher T] wanted to do, and that our resources were not extensive enough, we decided to go out and . . . buy what we needed. (Teacher-Librarian Interview III)

According to the Teacher-Librarian, the team approach to library programs was only beginning to develop within the School (Teacher-Librarian Interviews II, III). Its development was being hampered by several outside factors, particularly cutbacks in education and school funding, losses in teaching staff positions, and increasing pressures on teachers to work longer hours with larger numbers of students. However, the Teacher-Librarian emphasized that, even in the current situation, progress was being made. Each year more teachers were willing to relinquish some control over the instructional process in order to work with the Teacher-Librarian in teaching library and research skills. It was the aim of the Teacher-Librarian to create a non-threatening climate in which teachers and administrators were introduced to the information search process approach and encouraged to implement the parts of the Model with which they felt comfortable.

In terms of the levels of mediation as described by Kuhlthau (1993b, 138), the Teacher-Librarian in this study functioned primarily as organizer, locator, identifier, and advisor in the information searches of the students. In terms of the levels of education, a

second type of intervention in the information search process (Kuhlthau 1993b, 147), the Teacher-Librarian acted primarily as organizer, lecturer, instructor, and, in a limited number of instances, as tutor. In only one assignment (Teacher Y's classes) did the Teacher-Librarian have the opportunity to offer process intervention and instruction in the role of counsellor. As a counsellor, the Teacher-Librarian provided on-going guidance and instruction to students as they identified and interpreted information to solve evolving information needs.

Most of the teachers preferred to retain control of the evaluation process, although lack of time and other responsibilities would have made it very difficult for the Teacher-Librarian to be available for all of the information sharing sessions even if the teachers had asked for input from the Teacher-Librarian. The Teacher-Librarian did evaluate some of the written products in two of the student assignments. Teacher W requested the Teacher-Librarian's input in the evaluation of all student reports. Teacher Y invited the Teacher-Librarian to evaluate some of the student journals which were one of the requirements of the assignment (Assignment 6).

In the teaching of the Focus on Research Model, the Teacher-Librarian served mainly as a resource to the teachers during the planning stage of the assignments. There was no direct teaching of the Model to either the students or the teachers.

School administrators were not involved in the six assignments in any direct fashion, although the Principal had consistently voiced support for cooperative planning and teaching in student research projects (Memos to Teacher-Librarian 1992, 1993).

Results of the study showed that the research process used by students was affected by the roles assumed by teaching staff. In the classes where teachers assumed traditional roles in the planning and implementation of research projects, students primarily used source and pathfinder search strategies; in the classes where teachers developed and maintained cooperative teaching relationships with the Teacher-Librarian, students tended to use process-based information strategies. Most of the teachers continued to function within traditional roles that ensured that teachers remained in control of student learning experiences, and that the Teacher-Librarian served as a useful supplier of information resources. However, the teacher who was most willing to relinquish some control of the learning process and to capitalize on the expertise of the Teacher-Librarian as a member of the teaching team (Teacher Y) was able to implement a

process-based approach to information use by students.

C. Design of the Student Assignments

Three elements of assignment design were considered in the study: objectives, structure, and teacher expectations concerning resource use.

1. Objectives

Research by Kuhlthau (1993a) suggests that the success or failure of the implementation of process-based research can be predicted by examining the design of the student assignments. The goals and objectives of the assignment determine how the assignment is implemented and ultimately, the success of the project in helping students develop research skills. Research just for the sake of developing research skills is not effective.

> Many assignments were "added on," rather than being an essential component of the course of study and directly integrated into the subject-area curriculum. . . . Even the most enlightened teachers seemed to regard library assignments as enrichment activities rather than as ways of learning essential concepts and for developing basic skills for addressing emerging questions. (Kuhlthau 1993a, 14)

In this study, none of the six assignments could be characterized as enrichment activities. All of the teachers considered the work to be an integral part of the classroom curriculum. Four of the six teachers (Teachers S, T, W, and X) listed classroom curriculum content objectives first. Research skill objectives were cited by all of the teachers but the majority viewed these skills as useful tools that would assist students in achieving the content objectives. A fifth teacher, Teacher R, listed research skills as primary in the assignment. This teacher was especially interested in teaching the students skills associated with one stage of the information search process–information processing. The Teacher presented the skills as tools that allowed students to control their own learning experiences more effectively. Teacher R's students focused primarily on one part of the Model. They did not complete the entire information search using a process-based approach to information.

> With this particular group, you pretty much have to make the organization obvious for them. I find that they are released then to concentrate on the content and such things as how they put the information across. There's too much emphasis on mainstreaming and people doing the same topics and this kind of thing is really essential where people, very much, are individuals and want to be responded to as individuals and learn as individuals. (Teacher R Interview)

A sixth teacher (Teacher Y) also identified the development of research skills as primary in the course assignment (Teacher Interview). Special emphasis was placed on the skills associated with information processing, including information evaluation and critical thinking. The skills were seen as essential to the achievement of the course content objectives.

In all the assignments, both content and research skill objectives were included. What separated the assignments was the amount of emphasis placed on content and products, as compared to the amount of emphasis placed on the research skills and process. Some of the teachers wanted students to be exposed to a certain number of ideas or facts; other teachers were willing to accept an outcome of unique and varied learning experiences for individual students. In assignments in which content and products were considered more important by the teachers, students appeared to use source and pathfinder search strategies. In the assignments in which the research process was considered to be as important as content and products, students tended to use process-based research strategies.

2. Structure

The type and amount of structure incorporated into the assignments by the teachers was also an important part of the design. The students who used a process-based approach to information use (Teacher Y's students) were required to progress through an assignment that contained more process-related structure than students who used source or pathfinder search strategies. Teacher Y's students received more guidance in topic formulation, more library skill instruction that was tied to immediate needs of specific groups (mini-lessons), and more guidance in working through the search process in a way that helped students develop an awareness of the tasks and feelings involved in different stages of the process.

In the area of topic selection, the importance of the content objectives was clearly indicated. None of the classes was given unrestricted choice of topics. Three of the assignments listed general topics and allowed students to narrow the focus to an area of interest. Two of the assignments, both in Social Studies 20, provided students with a list of specific topics from which they were allowed to choose. The assignment in English 10AC gave the students no choice in topic. The degree of latitude given to

students in the choice of research topics appeared to be determined by classroom curriculum content objectives. In those assignments where teachers wanted students to learn certain concepts or be exposed to particular areas of knowledge, students were assigned more specific topics, with less freedom of choice. Students who used a process-based search strategy (Teacher Y's classes) were assigned a general topic. They had no choice of topic, but were given the freedom and the guidance necessary to allow them to choose a focus that reflected their interests, their level of knowledge, and their experience concerning the general topic.

All of the assignments included some type of instruction in library use for the students. Four of the teachers provided general instruction in library use in the classroom and asked the Teacher-Librarian to provide additional instruction on library tools and materials within the library. A fifth teacher took full responsibility for library instruction. A sixth teacher, Teacher Y, delegated responsibility for library skill instruction for students to the Teacher-Librarian. The Teacher-Librarian provided individual assistance to students within the library for all assignments. All of the six teachers were present during the class periods in the library, but the amount of student assistance provided by teachers varied considerably. Three of the six teachers described the Teacher-Librarian as taking the leadership role during the information retrieval stage. Two of the teachers reported that the Teacher-Librarian and the teacher cooperated in providing student assistance, and one teacher assumed the primary role in assisting and directing students within the library context. All of the teachers incorporated library instruction and assistance for students into the assignments. Variations in the way in which this instruction and assistance was provided appeared to be affected by the role perceptions held by the teachers.

None of the teachers incorporated any direct teaching of the research process or the Focus on Research Model into their assignments. Four of the teachers noted that the Model had been discussed during the planning sessions with the Teacher-Librarian, so they were aware of the process and the stages. Teacher R chose to focus on some specific information retrieval and processing skills, particularly in the area of organization. Teacher S encouraged students to use the Research Activity Unit Plan taken from Focus on Research in order to work systematically through the stages of the research process. However, no time was allotted to direct instruction in research as a process or the stages of the process. Teacher T did not teach the Model directly but emphasized that

experience had shown that an indirect method of teaching the research process was far more effective.

> I defined what each presentation had to have in it, as standard elements, and then I worked with each group to provide specifics. . . . So I never start with a photocopy handout of some sort, saying this is one model of research. I prefer to deal with it in the indirect route. . . . I tried it the other way, and I think it works more effectively, for most students, at least, in high school level. If you want to mention theory at all, you talk about the theory while you are part way through the process, rather than introducing theory first and then trying to apply it. (Teacher T Interview)

Teacher W initially expected students to work through the stages of research process as listed in the assignment handout, using the Teacher-Librarian as resource person and facilitator. However, the problems experienced by students during the assignment convinced the Teacher of the need to place more emphasis on helping students to understand and to apply the Model in their information searches.

> I think I would spend more time going through each stage and elaborating as to what . . . and the importance of each stage for the students so that they're very clear as to what's being attempted–what the focus is–what we want them to learn, but also what they would want to learn from going through each stage. (Teacher W Interview)

Teachers X and Y also did not structure any direct instruction on the Focus Model into the assignments. Teacher X noted that students were given individual assistance with the research process. Teacher Y created a very tightly structured assignment that deliberately led student groups through the stages of the research process, with special emphasis on developing a focus and evaluating information in order to construct new understandings of broad issues. Variations in the way in which the Focus Model was indirectly incorporated into the assignments in the study appear to be influenced by the degree of importance placed on the information sharing products as compared to the information search process. In assignments in which students were evaluated primarily on the basis of the content of papers and presentations, students were generally encouraged to use the skills listed in the Information Retrieval Stage of the Focus Model. In assignments in which students were evaluated not only on the basis of final written and oral products, but also on the basis of how effectively they worked through the information search process, students usually received more direction and guidance throughout the process, often in the form of printed planning guides and appraisal sheets (group and self

evaluations) taken from the Focus on Research handbook. In some cases (Teachers S and W), students received the planning guides but did not receive much guidance in how the guides should be used. These teachers noted in their assignment evaluations that students did not use the planning guides as effectively as they had hoped. In classes in which students used a process approach to information use (Teacher Y's classes), students received a great deal of guidance in working through the research process from both the teacher and the Teacher-Librarian throughout the assignment.

3. Teacher Expectations Regarding Resource Use by Students

A third factor included in the design of the assignments was the expectations of the teachers regarding where students should search for information and what type of information resources students should use to complete their assignments. Usually these expectations were not directly stated in the assignment handouts, so information was collected through teacher and student questionnaires and through informal conversations with the key informants. The study showed that variations in the sources and types of information resources recommended seemed to be affected by grade level and individual teacher expectations. In addition, there was a variation between the sources which the teachers said they had recommended and the sources which the students said the teachers had recommended. This may indicate that not all students were aware of all of the potential information sources available to them.

Teachers were also asked what types of non-library information sources were suggested to students. Results showed that expectations differed by grade level. Grade 11 students were directed to use personal interviews, written requests for materials, personal requests for materials, television programs, and teacher-owned materials when available. Some of the Grade 10 students were encouraged to use written and personal requests for information and relevant television programs. Teachers suggested a far broader range of information materials to Grade 11 students than to Grade 10 students. The higher number of suggestions made to the Grade 11 students seemed to indicate an expectation that the more mature students should seek information from sources other than just libraries. Data from the student questionnaires showed that few students consulted non-library sources of information, in spite of teacher recommendations. The average number of non-library consultations per student was less than one (0.7). Grade

11 students did search more non-library sources than Grade 10 students but the average number of non-library consultations per student was still less than one (0.8).

D. Philosophy of Learning

Philosophy of learning encompasses two of Kuhlthau's basic enablers: a mutually held constructivist view of learning and a shared commitment to teaching skills for lifelong learning and for motivating students to take responsibility for their own learning (1993a). Results of the study suggested that a constructivist view of learning was necessary but not sufficient to ensure the implementation of a process approach to information use. All of the students worked within an environment in which the constructivist philosophy of learning was supported. All of the teachers exhibited a strong commitment to improving student learning experiences through the student research assignments. They consistently showed positive attitudes toward innovation and risk-taking. However, only three classes (students of Teacher Y) used a process-based approach to information use.

The Teacher-Librarian actively supported the constructivist view of learning and the development of lifelong problem solving skills. School library programs aimed to teach students how to learn, not just how to find specific information.

> Curriculum is pushed to the detriment, I think, of real learning. And even though I say that, I still see that perhaps in the ten years that I've been in the library, there has been some progress. . . . There's still work that has to be done, because teaching of the research process is much more difficult than teaching content. (Teacher-Librarian Interview II)

All of the teachers articulated a belief in the constructivist philosophy of learning–some to a greater degree than others. In many cases, the constructivist philosophy of learning was translated into an emphasis on information processing, particularly the skills of critical thinking and information evaluation, rather than on the entire search process. Teacher S wanted students to examine issues and background of the novel To Kill A Mockingbird in depth, in order to come to a more complete understanding of racism.

> I suppose it comes down to an issue of question of levels of thinking and critical thinking, and I suppose whenever one is approaching research, one hopes that a person gets beyond the very basic stages of critical thinking in terms of just finding out factual information . . . and so, in that regard, I was looking for a little

> more in-depth analysis of the problems and issues, in addition to simply a collection of factual information and a compilation of facts. (Teacher S Interview)

Teacher T was also expecting a level of student work that went beyond straight recall and understanding of the epics. The primary aim of the assignment was to help students develop some knowledge of the values of medieval life.

Teacher W was particularly concerned with the development of critical thinking skills and the learning experienced by the students. Evaluation of the assignment included not only assessment of the information sharing products, but also consideration of the level of learning exhibited by each student.

> As an instructor, it's my responsibility to at least have an understanding of what changes may be in the thinking–or in the process of thinking–that these students have gone under in the time of accessing this information. . . . So, the evaluation–it was not simply 'How much information did you get?' but 'What did you do with that information?' and 'Could you relate it to others?' And then, 'What changes in perspective have come about because of that information?' (Teacher W Interview)

Teacher X developed an assignment that required students to exercise analytical skills. Information was to be gathered from a number of different kinds of sources and then presented in four different mediums, some of which were visual. Students were expected to take an active role in the search process, not simply regurgitate relevant bits of information.

> I wanted students to develop the ability to take a picture or a photograph or something of that nature and then be able to analyze it, rather than just describing what they found. I was looking for a higher level of thinking. (Teacher X Interview)

Teacher Y also placed emphasis on the development of critical thinking skills within a collaborative environment. However, Teacher Y's students received guidance throughout all stages of the research process. Teacher Y developed a structured assignment with built-in check points and feedback for the students that ensured that all participants began with an overview of the topic and completed focus formulation before moving on to the stages of information retrieval and processing. Students were initially divided into research groups. Each group was directed to find information related to its topic, to prepare a class presentation on the topic, and to develop a narrower focus on the topic by identifying a specific problem pertaining to the topic. After each class presentation,

students were organized into focus groups and given the task of considering solutions for the problem identified by the research group. Each member of the focus group was assigned a role representing various stakeholders with different perspectives on acceptable solutions to the problem. For example, several of the focus groups included a scientist, an industry representative, a policy maker from government, and an environmentalist. Within the focus groups, students were given the opportunity to question assumptions and perspectives on related issues.

> I think that they [students] did have an opportunity to develop some critical thinking so that they won't accept everything at face value. They now know ways of finding out information to see if that's a legitimate answer or idea, and so that they can even now support their own ideas in a more logical manner. (Teacher Y Interview)

The philosophy of learning most conducive to the development of the process approach to student research and to the implementation of the Focus Model of research was present in the School, in the library program, and in the assignments developed by the six teachers who participated in the study. However, most of the teachers did not recognize the information search process as described in Focus on Research as a useful vehicle for achieving the goals of empowering students in the learning process and developing lifelong skills for problem solving and higher order thinking. Most of the assignments emphasized skills in the information processing stage of the research process, rather than the entire search process. Students who were not guided through the entire research process, beginning with planning and focus formulation, tended to use source and pathfinder search strategies.

IV. Findings: Description of How Students Use Information Resources

Two of the specific research questions developed at the beginning of this study focused on how students use information resources, both in the school library and outside of the school library, in order to complete curriculum-based research assignments. Results of the study showed that patterns of resource use by students were very similar to the patterns described in studies of a comparable nature completed in the past fifteen years. Most students (eight of the eleven classes) tended to use source and pathfinder search strategies that focused on information retrieval tasks and creation of information sharing products. The school library was searched by almost all students and most of the

materials cited were from the school library. The materials cited in the bibliographies were taken from a small number of sources, were generally in print format, and were of a relatively current nature. Most students indicated that they received assistance, often in the school library, during their information searches.

Data were collected to describe the level of student awareness of potential information sources within and beyond the school library environment. A comparison of the libraries and information resources that teachers said they recommended to students and the libraries and information resources that students said teachers recommended to them revealed some interesting differences that suggested that students were not always aware of the resources that teachers expected or assumed that they should be. A description of the information sources that students actually searched and cited may reflect the level of accessibility of the sources, and positive and negative attitudes towards particular libraries, library staff, and other types of information resources.

A. Information Sources

1. Number and Types of Libraries

Variations in the number and types of information sources searched and resources cited appeared to reflect differences in the grade level of the students, in the topics assigned to students, in the requirements of the assignments, and in the expectations of the teachers. A higher number of libraries was searched by students in Grade 11, by students in Social Studies, and by students of teachers who stated that they expected the information search to include more than one library. The reference patterns indicated in the bibliographies generally supported the information taken from the student questionnaires regarding information search strategies.

According to the student questionnaires, the number of libraries consulted ranged from one library by 35 students (27%) to four libraries by 4 students (3%). The median and mode for the total group were 2. Number of libraries consulted varied according to grade (see Table 5.2). The mean number was lower for Grade 10 (1.8 libraries per student) and higher for Grade 11 (2.2 libraries per student). Four out of ten Grade 10 students consulted only one library. The mean number of libraries consulted also varied by subject, with a low in English of 1.8 libraries per student and a high in Social Studies of 2.4 libraries per student. Social Studies teachers encouraged their

students to look beyond the school library in order to locate the most current information on their topics and to become familiar with different perspectives and views relating to global issues.

Data from the Bibliography Sheets showed that over half of the bibliographies (64%) contained references from only one library. Approximately one-third of the bibliographies (32%) contained references from two libraries. Only two bibliographies contained references from more than two libraries. When this information was compared with the number of different types of libraries that students indicated they searched, it appeared that many students did go beyond the school library in their search for information but some were unsuccessful in locating relevant information. Almost half of all students (45%) indicated that they had searched two libraries, but slightly fewer than one-third (32%) of the bibliographies contained references taken from two libraries. One-quarter of the students (25%) said they searched three libraries. However, less than 2% of the bibliographies contained references taken from three libraries. The majority of English (80%) and Biology (85%) bibliographies included references to material taken from only one library. However, over half of the Social Studies bibliographies (52%) contained references from two libraries, and 8% of the bibliographies contained references from more than two libraries.

Students were also asked to indicate the types of libraries they searched and the sources of bibliographic citations. The choices for types of libraries on the student questionnaire included school, public, college, university, private/special, and home/personal. The research site was located in a large urban centre with relatively easy access to all of the types of libraries listed on the student questionnaire. Variations in the types of libraries searched by students occurred between grades, subjects, and teachers. The three main libraries searched by students were school, home/personal, and public.

Data showed that almost all students (98%) employed a search strategy that included the school library (see Table 5.3). Over half of the students (57%) searched home and personal libraries for information. Less than half the students (40%) included a public library in their search. The other three types of libraries–college, university, and private/special–played a very minor role in the information searches. None of the 129 students in this portion of the study searched a college library.

The percentage of Grade 10 students searching each type of library was only slightly lower than the percentage of Grade 11 students, except in the case of public libraries. Only 28% of the Grade 10 students said they had searched a public library as compared to 47% of the Grade 11 students. Greatest variations in types of libraries searched occurred between subjects (see Table 5.3). Social Studies students consulted more types of libraries than students in either of the other two subjects. This variation may be due to the currency and quality of information available and/or the ease of access to particular types of information in the various types of libraries. The Teacher-Librarian suggested that some of the assignment topics have become so specific to the classroom curriculums that the school library may be the only place where students can successfully locate the relevant information (Teacher-Librarian Interview II). Variations in types of libraries searched by students also occurred within subjects, apparently caused by differences in teacher expectations and assignment requirements. For example, only 33% of the Social Studies students in Teacher W's class consulted public libraries as compared to 74% of the Social Studies students in Teacher X's class. None of the students in Teacher W's class used a university library, whereas 13% of the students in Teacher X's classes indicated that they searched a university library.

Data from the bibliographies tended to confirm the information search patterns indicated in the student questionnaires, but, once more, suggested that students often searched libraries without citing any materials from the libraries. The 58 bibliographies contained a total of 247 references, with 191 references (77%) from the school library, 29 references (12%) from public libraries, 8 references (3%) from university libraries, 6 references (3%) from private/special libraries, and 13 references (5%) from home/personal libraries. When sources of references were analyzed by grade, the patterns showed that Grade 10 bibliographies did not include any references from public libraries whereas 14% of the references in Grade 11 bibliographies were taken from public libraries. Grade 10 bibliographies also contained a higher percentage of references taken from home/personal libraries than those of Grade 11 bibliographies. Grade 10 students seemed to be more successful in locating relevant information in libraries that were familiar and in libraries where they had a greater access to mediation.

The greatest variation in library sources of references occurred in a comparison of bibliographies by subject (see Table 5.4). Percentages of references taken from the

school library ranged from a low of 62% for Social Studies to a high of 98% for Biology. English students did not list any references taken from public libraries, whereas Social Studies students derived 25% of their references from public libraries. Social Studies and Biology students listed a very small percentage of references taken from home/personal libraries; English students derived 13% of their references from home/personal libraries. Biology students used information taken almost exclusively from the school library, perhaps because both the Teacher and the Teacher-Librarian advised the students that the school library contained sufficient and adequate resources for the assignment. In contrast, Social Studies students were encouraged by their teachers to seek information from other libraries because the teachers believed that school library resources were not adequate for the assignment (Teacher W and X Interviews).

2. Number and Types of Non-Library/Non-Traditional Sources of Information

Students were also asked to indicate what non-library sources of information were searched. Choices listed on the questionnaires included personal interviews, written and personal requests for information, television programs, telephone directories, and materials borrowed from teacher. Students were also given space to add other non-library sources, if they wished to do so. Television programs were most frequently named as a non-library information source, with 40 students (31%) indicating that they had watched programs related to their assignment. Materials borrowed from the teacher were consulted by 15 students (12%). Information was sought through personal and written requests by 16 students (12%). Interviews were conducted by 11 students (9%). Telephone directories and other sources did not play any part in the searches of most of the students. Data showed that a higher percentage of Grade 11 students searched non-library information sources as compared to the percentage of Grade 10 students. The greatest variation in percentage of students searching non-library information sources occurred between the subjects (see Table 5.5). Social Studies students searched more non-library sources than English or Biology students. The mean number of non-library information sources consulted was 1.2 for Social Studies students compared to 0.5 for English students and 0.4 for Biology students.

Data from the study showed that student searches generally did not include consultation of non-library sources of information. The range for mean number of non-library sources consulted by each class varied from a low of 0.1 to a high of 1.4. Non-library sources of information played a relatively minor role in the searches of students in this study.

3. Format of Materials Cited in Bibliographies

An analysis of the types of materials listed as references on the Bibliography Sheets generally confirmed the information taken from the questionnaires regarding information sources that students searched and used. Most of the information was taken from traditional print materials found in libraries (see Table 5.6). Monographs were the most frequently cited type of information source (55% of total references), followed by encyclopedias (17% of total references), and periodicals/newspapers (16% of total references). References to non-print (audio-visual and online information) resources comprised only 7% of the total number of references.

It was surprising that, although some students indicated they had searched non-library information sources, there were no non-library information sources cited. For example, 9% of students indicated they had used personal interviews to gather information and 31% of students said they had watched television programs related to their assignment topics, but there were no references listing personal interviews or television programs as information sources on the Bibliography Sheets. This discrepancy may suggest that students did not know how to cite some of the less traditional information sources so they chose to omit such references. Students may have also regarded traditional print information sources as more acceptable or of a greater veracity or higher quality than non-print information sources.

Grade 10 bibliographies consisted almost exclusively of references taken from monographs and encyclopedias while Grade 11 bibliographies were more diverse (92% compared to 69%, respectively). Grade 11 bibliographies contained a higher percentage of references to periodicals/newspapers (19%) than did Grade 10 bibliographies (2%).

The greatest variation in types of materials cited occurred in the comparison of reference patterns in bibliographies according to subject (see Table 5.6). References in Social Studies and Biology bibliographies were taken from a wider variety of materials,

with less emphasis on monographs and encyclopedias. There was only one reference to a periodical in the English bibliographies. In Social Studies, 18% of all references were taken from periodicals and newspapers. In Biology, the percentage of references taken from periodicals and newspapers was even higher (22%). Social Studies bibliographies also contained ten references (9%) to pamphlets, reports, and other similar print sources taken from the vertical files, as compared to one reference (2%) in English bibliographies and no references in Biology bibliographies. Data suggested that students in all subjects relied to a large extent on information taken from monographs and encyclopedias, but students in Social Studies tended to take information from a wider variety of materials. Variations in the types of materials listed in the bibliographies may be due, to some extent, to the availability of information in different material formats, but requirements of the assignment as defined by the teacher appeared to have the greatest effect on the types of materials cited. For example, Teacher X designed a Social Studies assignment that required students to create four different information sharing products. Two of the products were to be presented in non-traditional formats, such as cartoons, photographs, collages, video tapes, maps, graphs, charts, or histograms. As would be expected, students in Teacher X's classes tended to cite a greater number of materials in different formats. Currency of information sources was more important to students in Social Studies and Biology. This may have influenced students' use of periodicals, newspapers, and vertical file material.

4. Number of References Listed in Student Bibliographies

Students were instructed to list all information sources that they used in the completion of their projects, regardless of whether the sources were directly cited in their written work. The data suggested that most students used a relatively small number of information sources. This may indicate that students were not getting a broad overview of their topic before they began retrieval of information. Students who are using information from only one or two sources may be regurgitating a single perspective or viewpoint on an issue without forming a personal understanding of the topic. A total of 247 references were listed in the 58 bibliographies. The number of references per bibliography ranged from a low of 1 reference in 13 bibliographies to a high of 11

references in 5 bibliographies. The mean number of references listed in the bibliographies was 4.3. The median was 3. The mode was 1.

The greatest variation in number of references listed in Bibliography Sheets occurred when the two grades were compared (see Table 5.7). Most Grade 11 bibliographies contained more references per bibliography than did the Grade 10 bibliographies. The mean number of references for Grade 10 was 2.3; the mean number for Grade 11 was 5.3. The median for Grade 10 was 1; the median for Grade 11 was 4.4. Reasons for the variation may include topics of the assignments, maturity of the students, and expectations of the teachers. In addition, students working in groups tended to list more references on their Bibliography Sheets than students working individually. All group bibliographies were submitted by Grade 11 students. The mean number of references in individual bibliographies was 3.0; the mean number for group bibliographies was 6.4.

5. Currency of References Listed in Student Bibliographies

References in the student bibliographies showed a wide range in time span. However, currency of information appeared to be important in selection of information sources in the majority of bibliographies. References to materials published after 1980 comprised 79% of all references in the student bibliographies. The greatest number of references was taken from materials published between 1986 and 1990. The median publication age of references was also 1986-1990. More than one-fifth of all references (22%) were taken from materials published after 1990. The greatest variation in age patterns occurred when references were compared according to subject (see Table 5.8). References in the English bibliographies did not reflect as strong a preference for current materials. In the English bibliographies, 44% of the materials cited were published after 1985, compared to 63% in Social Studies and 64% in Biology. The publication dates of the references in the Biology bibliographies also showed a wide range. Only 18% of the references in the Biology bibliographies were to materials published after 1990 compared to 25% in Social Studies and 22% in English. However, 46% of all references in the Biology bibliographies fell within the 1986-1990 time span. This suggested that Biology students may have had difficulty locating current relevant information on their topics. Analysis of the data suggested that students did evaluate information sources as to

currency, but may have been limited in some topic areas to materials with older publication dates due to problems in availability and access.

B. Mediation in Student Information Searches

Responses from the student questionnaires were also used to determine the amount and what types of assistance students utilized in order to conduct their information searches in libraries. The amount of assistance that students received revealed a high level of mediation in the information search process. Data from the 129 student questionnaires showed that the mean number of instances of all types of assistance was 1.2 per student. By class, the mean number of instances of assistance varied from a low of 0.8 per student to a high of 2.2 per student. Grade 10 students indicated that they received assistance in libraries slightly more often than Grade 11 students. The Grade 10 mean was 1.4 compared to the Grade 11 mean of 1.2. The greatest variation in the amount of overall assistance for students in libraries was revealed in a comparison among teachers. Data from students in Teacher W's class indicated a mean number of 1.0 instances of assistance per student; students in Teacher T's class indicated a mean number of 2.2. Results of the data suggested that most students required some degree of mediation in their information searches. It also showed that almost all students were willing to seek and accept mediation in the search process. The study suggested that mediation played an important role in the information search process for students. Students in this study did not use library resources independently.

Further analysis of the data focused on the types of assistance received by the students. Assistance was divided into three types: in-house, outside, and proxy. In-house assistance referred to assistance from librarians, teacher-librarians, library staff, and anyone who owned or administered a personal information collection. Outside assistance was defined as assistance given by friends or family members who accompanied students to a library during the information retrieval stage. This type of assistance included "moral support," knowledge of a particular collection, experience in information location and retrieval, or any combination of the three. Assistance by proxy referred to assistance obtained by students who asked other people to locate and retrieve information from various libraries for student assignments. The students did not accompany the other people to the libraries. These categories were not mutually

exclusive. Some students used only one type of assistance; others used all three types. The greatest amount of assistance was in-house in nature, but a large number of students did use outside and proxy assistance as well. Data taken from the student questionnaires showed that 81% of the 129 students used in-house assistance, 26% used outside assistance, and 16% used proxy assistance. Variations in the types of assistance used by students occurred between the two grades (see Table 5.9). The percentage of Grade 10 students using in-house assistance (78%) was slightly less than that of Grade 11 students (83%). However, the percentages of Grade 10 students using outside assistance (37%) and proxy assistance (22%) were both considerably higher than the percentages for Grade 11 students using outside assistance (20%) and proxy assistance (13%). This may have indicated that Grade 10 students were not as confident in the library environment as Grade 11 students. Over one-third of the Grade 10 students brought a friend or a family member into a library to help them look for information. Almost one-quarter of the Grade 10 students asked someone else to retrieve information for them within a library. The Grade 11 students appeared to be more comfortable working in the library environment with library staff. The need for support from friends and family did not appear to be as great for Grade 11 students as for Grade 10 students.

Responses from the student questionnaires allowed a more detailed description of where each of the three types of mediation was used by students. Most of the in-house assistance utilized by students occurred within the school library. Out of a total of 129 students, 76% received assistance from the Teacher-Librarian or other school library staff. The percentages of students being assisted by staff in other libraries were much lower. In-house assistance in public libraries was sought by 20% of the students and in home/personal libraries by 13%. In a comparison by grade, a higher percentage of Grade 11 students used in-house assistance in school, public, and university libraries. The greatest variation in types of mediation used by students was between subjects (see Table 5.10). A higher percentage of Biology students (85%) sought in-house assistance in the school library as compared to English (70%) and Social Studies (74%) students. However, Social Studies students received more in-house assistance within public, university, and private/special libraries. These variations in location of mediation appeared to be a reflection of where students were advised by their teachers to search for information.

All of the classes received a relatively large amount of in-house assistance in the school library environment. In-house assistance in public and home/personal libraries also played a role in the information search of a small percentage of students. The study suggested that school library staff and particularly the Teacher-Librarian, played an important role in helping students complete the information retrieval stage of the search process.

Outside assistance by friends and family members played a much smaller part in the search strategies of students than that of in-house assistance. Approximately one-quarter of the 129 students indicated that they used outside assistance in one or more types of libraries. This kind of assistance was used by 16% of the students in the school library, by 8% in public libraries, and by 6% in home/personal libraries. The greatest variation in amount of use was between grades. Questionnaires indicated that 30% of all Grade 10 students used this kind of assistance in the school library as compared to only 8% of all Grade 11 students.

Proxy assistance was employed by 16% of the total number of students. This type of assistance was used most often in school and public libraries. Grade 10 students used this type of assistance slightly more than often than Grade 11 students, particularly in acquiring information from public libraries. Because the number of students using this type of assistance was relatively small, the patterns of usage described in the study are tentative. In addition, the information on the questionnaires may have been skewed according to how confident students were that their answers would be kept confidential. Some students may have been reluctant to admit that they asked other people to gather information for their assignments.

V. Findings: Comparison of Findings with Previous Resource Use Studies

A comparison of findings in previous studies of resource use by students completing research assignments reveals similar patterns of use. It must be recognized that, although earlier resource use studies are similar in nature, they do differ in some aspects, including type of sample and methodology. This means that comparisons are likely to be valid only at a broad level. The study by Mancall and Drott (Mancall 1978, Mancall and Drott 1979) was based upon a sample of six academic, college preparatory American high schools in a large metropolitan area. Students were preparing papers for

independent study projects which were not necessarily curriculum-based. In the Drott, Mancall, Barber, and Robinson (1980) study, data were collected from a sample of fifteen American high schools located within one hundred miles of a major metropolitan area. Most of the participants were students in regular or academically superior classrooms. The assignments in this study were more closely related to curriculum content. The Wozny (1982) case study described the resource use of Grade 9 honour students completing independent research assignments in science. The Hall (1986) study was based on data gathered from research assignments completed by Grade 10 students from eight urban and rural secondary schools in northern British Columbia. Student assignments in this study were related to the core curriculum.

In all four studies, the school library was clearly the library most used by students. Most students indicated that they searched more than one kind of library but that pertinent information was most frequently found in the school library. The public library was consistently the second most useful source of information for students. However, it appeared that it was not as useful to students in the more recent studies.

Mancall (1978) suggested that public libraries played as important a role in information searches as did school libraries.

> Both school and public libraries were heavily used by students in this sample. In the search process most students (86%) tried their school library. If public library use is analyzed as either use of a neighbourhood public or use of a regional public library, 89% of the students used one, the other, or both. (55)

In the Drott, Mancall, Barber, and Robinson (1980) study, 65% of the students found information in the public library. Only 24% of the students in the Hall (1986) study cited materials from the public library. In the current study, approximately 18% of the students who completed Bibliography Sheets cited materials taken from the public library.

Home libraries were searched by a large percentage of the students in each study. However, relatively few students listed references from that source. Once again, reference patterns suggested that home libraries were becoming less useful to students. In the Drott, Mancall, Barber, and Robinson (1980) study, 49% of students found information in the home library. In the current study, approximately 15% of the students who completed Bibliography Sheets cited materials from home/personal libraries. Other types of libraries, including college, university, and special played a minor role in the search process in all of the studies.

Mediation in the library context was recognized as important in several of the studies. Mancall (1978) noted that 40% of all students received staff assistance in the school library. Wozny (1982) found that cooperative training strategies, particularly in online searching, developed by librarians and teachers do affect student use of information. Hall (1986) also cited a high incidence of assistance to students, particularly from teachers and library personnel (40% of all students). Results from the current study suggested that students received more assistance and mediation than in earlier studies. Information taken from the student questionnaires showed that assistance was provided in the school library to 76% of all students.

In a comparison of the reference patterns in the bibliographies, students in earlier studies cited a larger number of references. In the Mancall (1978) study the median number was 10, in the Hall (1986) study the median number was 3.5, and in the current study the median was 2.9. However, it is difficult to make any valid comparisons because of differing assignment requirements and differing student samples. Results may suggest that there was less emphasis by the teachers on the production of accurate and complete bibliographies in the current study.

In all of the studies except the Wozny (1982) study, students obtained the majority of their references from monographs. In the Mancall (1978) study, 66% of all references were taken from monographs; in the Hall (1986) study, 50%; and in the current study, 55%. Encyclopedias were cited much more frequently in the Hall (1986) study and in the current study than in the earlier Mancall (1978) study. Mancall reported that 4% of all references were taken from encyclopedias. In the Hall (1986) study, 22% of the total references were from encyclopedias and in the current study, the percentage of references to encyclopedias was slightly lower, 17%. Percentages of references to journals were slightly greater in the Mancall study (20%) compared to the Hall study (14%) and the current study (14%).

In the American studies, monographs and journals were the types of materials most frequently cited. Encyclopedias played only a minor role. In the more recent Canadian studies, monographs were also the most frequently cited type of material. Encyclopedias and journals were the next most frequently cited types of materials, but references from each of these types of materials represented much smaller percentages of the total number of references (less than 20%) than references from monographs (more

than 50%). This variation in reference patterns may be due to a number of factors, including assignment requirements, collection strengths, assignment topics, and ability levels of the students. All of the studies reported that student bibliographies contained a very small percentage of references to other print and non-print information sources, including pamphlets, reports, audio-visual materials, interviews, and online information sources.

Previous studies have examined the publication age of the materials cited in bibliographies in order to evaluate the currency of the information being used by students. Mancall (1978) used a five-year index of currency. She grouped student papers according to what percentage of their references were to relatively current materials (materials published within five years of the year in which the student assignment was completed). She reported that less than fifty percent of the materials referenced were published within five years of the assignment (116). Hall (1986) noted that forty percent of the materials cited in student bibliographies had publication dates within five years of the completion date of the student assignments (56). Results from the current study suggest that students may be using more current materials than was reported in earlier studies. Just over half of all materials (50.2%) cited in the bibliographies had publication dates within five years of the year in which the assignments were completed. The slight tendency on the part of students to cite more current materials in their bibliographies may have reflected a greater awareness of the importance of currency of materials. It may also have been a result of collection development policies in the school library. The Teacher-Librarian was constantly updating the collection, particularly in subject areas in which teachers regularly assigned curriculum-based student research projects. Teacher expectations and assignment requirements may also have influenced the number of citations to current materials in student bibliographies.

Patterns of resource use appeared to be similar throughout all of the studies examined. Most students searched more than one library for information, but were most successful in locating information pertinent to their topics in the school library. Mediation and guidance, particularly that of the teacher and teacher-librarian, played an important role in the information search process of students. Student bibliographies indicated that most of the information used by students in the completion of assignments was taken from materials in traditional print format, primarily from monographs,

encyclopedias, and journals. The current study did not find any major change in the types of materials cited as compared to the studies completed twelve to fifteen years earlier. Comparisons in currency of materials cited in the bibliographies suggested that students may have used a slightly higher percentage of more current materials in the current studies.

VI. Summary: Key Factors in the Information Search Process and Resource Use

A. Role of the Teacher

Teachers were most influential in determining the type of information search and the resource use of students. In all of the six assignments, teachers had final responsibility in determining the nature of the assignments, including the requirements for search strategies, and the type and number of information sources used in the completion of the assignment. Teachers exerted considerable control over the assignment topics and the time allotted to each of the stages in the search process. Teacher expectations were sometimes stated directly in the written assignments. More often, teachers communicated expectations more informally during classroom and library work periods. Teachers suggested information sources to students. They chose the type and amount of library-related instruction to be given to their students. They shaped the information search by deciding how much emphasis was to be placed on information sharing products as compared to the information search process. The information search process and resource use by students were also influenced by the types of evaluation that teachers chose to use to assign marks to the student projects.

B. Role of Mediators

Results of the study showed that students did not use libraries independently. Almost all of the students received some type of assistance in the information search process or in the location of pertinent information resources. Much of the assistance occurred within the school library and involved the Teacher-Librarian and/or the teacher. However, students also requested help in other types of libraries, particularly in public and home or personal libraries. In addition, students received assistance from friends and family members who accompanied them to the various libraries or gathered information for the students. Results suggested that students recognized a need for assistance in

libraries and were relatively comfortable in requesting help from library staff. This high level of use of mediation within libraries emphasized the influence of the mediators upon the search strategies and resource use of students. Data suggested that the Teacher-Librarian played a major role in influencing student search strategies and resource use, particularly in classes in which teachers expected the Teacher-Librarian to take control within the library.

C. Role of the School Library

The school library was the most important information source for all students. All of the teachers suggested to their students that they should consult the school library. Almost all students (98%) indicated that they had searched the school library for information. Over three-quarters (77%) of the materials cited by the students were from the school library. Over three-quarters of the students reported having received mediation from staff and/or teachers in the school library. This suggests that the resources and services available to students in the school library had the potential to exert a strong influence on the kind of information search and the types of resources utilized.

D. Role of the Focus Model as a Search Strategy

None of the teachers or students in the study appeared to be familiar with the Focus Model. In contrast, the Teacher-Librarian was a strong advocate of the Focus Model. The Teacher-Librarian was acquainted with the theory and research upon which the Model is based and had given workshops in the implementation of process-based research. Most of the teachers relied to some extent on the knowledge and experience of the Teacher-Librarian in the development of search strategies appropriate to their assignments. However, primary responsibility for the design of student assignments was always retained by the teachers. The Teacher-Librarian believed that teachers could not be forced to adopt the Focus Model. Rather, the Teacher-Librarian attempted to work with teachers in effecting change in the way they planned and structured student research assignments. To accomplish this, the Teacher-Librarian endeavoured to raise the teachers' levels of awareness regarding different research strategies and to introduce parts of the Focus Model that seemed at that time to best serve the teachers' needs.

For four of the six assignments (Teachers R, S, T, and X), more importance was assigned to the information sharing products than to the information search process. Emphasis on student products appeared to encourage the use of a source or pathfinder search strategy. For the two assignments in which the search process was emphasized (Teachers W and Y), the Teacher-Librarian acted as a teaching partner in the incorporation of elements of the process-based Focus Model into the assignment.

Results from teacher interviews and student questionnaires suggested that the Focus Model played a relatively minor role in the information search process and resource use of students in this study. Parts of the Model were incorporated into the student assignments and several of the written assignments included some of the copy-ready forms printed in the Focus on Research Handbook, but there was no direct teaching and implementation of the complete Model as a type of process-based search strategy.

E. Relationship Between the Information Search Process and Resource Use

The type of search strategy used appeared to have little effect on the patterns of resource use by students, except in the area of mediation. Where the process approach to information use was implemented, most students cited materials from the school library (98% of all references). The same students primarily cited materials in print format and showed a preference for monographs (60% of all references in bibliographies). Grade 11 students who used the process approach to information use tended to list more references in their bibliographies (median number of 6.5 references per bibliography) compared to Grade 11 students who used pathfinder and source search strategies (median number of 3.1). Variation in the number of references in the bibliographies appeared to be more directly influenced by teacher expectations, assignment requirements, and group work than by search strategy. Students who used the process approach to research worked in groups of five or six students. Data from the study showed that student groups tended to list more references in bibliographies than did students working as individuals. There appeared to be no significant difference between the two Grade 11 groups in the percentage of current references listed in their bibliographies. Both groups submitted bibliographies in which slightly over half of the references cited materials published within five years of the date of completion of the assignments.

Results of the study showed that a larger proportion of the Grade 11 students who used a process-based approach to information reported receiving assistance in the school library (85% of all students), as compared to the proportion of Grade 11 students who used traditional search strategies (74% of all students). This variation may be a reflection of extra guidance provided to students using the information search process.

Introduction of a process-based approach to information use appeared to have little effect on the resource use patterns of students in this study. Students consistently showed a preference for school library materials in traditional print formats. More than fifteen years ago, in one of the early studies of resource use by students completing research projects, Mancall (1978) noted that reference patterns suggested that students judged the value of materials according to format, not according to subject.

> Students are using materials in a pattern that suggests they do not view resources in all formats as of equal importance. . . . Training is needed to assist students in achieving a subject, rather than a format approach. (176)

Results of the current study suggest that patterns of resource use by students have changed very little in spite of the expectations that came with the introduction of new process-based search strategies and increased access to information resources available in a wide variety of print and non-print formats.

Table 5.1

STUDENT PARTICIPATION RATES IN THE STUDY
(n = 266 students)

Grade	Total # of Students	Total # of Student Work Units*	Consent Forms		Student Questionnaires		Bibliographies	
			Total # Completed	Response Rate (%)	Total # Completed	Response Rate (%)	Total # Completed	Response Rate (%)
Grade 10	**113**	**113**	**50**	**44%**	**46**	**41%**	**20**	**18%**
Teacher R	36	36	18	50	17	47	5	14
Teacher S	54	54	20	37	18	33	11	20
Teacher T	23	23**	12	55	11	50	4	17
Grade 11	**153**	**81**	**85**	**56%**	**83**	**54%**	**38**	**47%**
Teacher W	25	12	12	48	12	48	8	67
Teacher X	55	55	33	60	31	56	17	31
Teacher Y	73	14	40	55	40	55	13	93
TOTAL	**266**	**194**	**135**	**51%**	**129**	**48%**	**58**	**30%**

* Some classes worked in groups; some classes worked individually.

** Students worked in groups of 4 but were asked to submit individual bibliographies. Therefore, for the purposes of this study, the class was treated as if it were composed of individual work units.

Table 5.2

NUMBER OF LIBRARIES CONSULTED BY STUDENTS,
ANALYZED BY GRADE
(n = 129 students)

Number of Libraries Consulted	Grade 10 Students (n = 46)		Grade 11 Students (n = 83)		Total Students (n = 129)	
	#	%	#	%	#	%
0	0	0%	0	0%	0	0%
1	19	41	16	19	35	27
2	17	37	41	49	58	45
3	10	22	22	27	32	25
4	0	0	4	5	4	3

Table 5.3

TYPES OF LIBRARIES CONSULTED BY STUDENTS,
ANALYZED BY SUBJECT
(n = 263 consultations)

Types of Libraries Consulted	English (n = 83 consultations)		Social Studies (n = 104 consultations)		Biology (n = 76 consultations)		Total (n = 263 consultations)	
	# of Student Consultations	% of Students (n = 46)	# of Student Consultations	% of Students (n = 43)	# of Student Consultations	% of Students (n = 40)	# of Student Consultations	% of Total Students (n = 129)
School	43	93%	43	100%	40	100%	126	98%
Public	13	28	27	63	12	30	52	40
College	0	0	0	0	0	0	0	0
University	1	2	4	9	2	5	7	5
Private/ Special	2	4	2	5	1	3	5	4
Home/ Personal	24	52	28	65	21	53	73	57

Table 5.4

LIBRARY SOURCES OF REFERENCES*
LISTED IN STUDENT BIBLIOGRAPHIES,
ANALYZED BY SUBJECT
(n = 247)

Library Sources of References*	English		Social Studies		Biology		Total	
	References* (n = 46)		References* (n = 108)		References* (n = 93)		References* (n = 247)	
	#	%	#	%	#	%	#	%
School	33	72%	67	62%	91	98%	191	77%
Public	0	0	27	25	2	2	29	12
College	0	0	0	0	0	0	0	0
University	7	15	1	1	0	0	8	3
Private/ Special	0	0	6	6	0	0	6	3
Home/ Personal	6	13	7	6	0	0	13	5

References* - includes all information sources used by students in completion of research assignments; may or may not refer to a specific citation within the text of the student's final paper or report

Table 5.5

TYPES OF NON-LIBRARY INFORMATION SOURCES
CONSULTED BY STUDENTS,
ANALYZED BY SUBJECT
(n = 89 consultations)

Types of Non-Library Information Sources Consulted	English (n = 22 consultations)		Social Studies (n = 50 consultations)		Biology (n = 17 consultations)		Total (n = 89 consultations)	
	# of Student Consultations	% of Students (n = 46)	# of Student Consultations	% of Students (n = 43)	# of Student Consultations	% of Students (n = 40)	# of Student Consultations	% of Total Students (n = 129)
Personal Interviews	1	2%	9	21%	1	3%	11	9%
Written & Personal Requests for Materials	5	11	9	21	2	6	16	12
TV Programs	12	26	17	40	11	28	40	31
Materials Borrowed from Teacher	2	4	10	23	3	8	15	12

Table 5.6

TYPES OF MATERIALS CITED IN STUDENT BIBLIOGRAPHIES, ANALYZED BY SUBJECT
(n = 247 references*)

Type of Material	English		Social Studies		Biology		Total	
	References* (n = 46)		References* (n = 108)		References* (n = 93)		References* (n = 247)	
	#	%	#	%	#	%	#	%
Monographs	31	68%	49	45%	56	60%	136	55%
Encyclopedias	11	24	20	19	13	14	44	17
Pamphlets, Reports, Other**	1	2	10	9	0	0	11	5
Periodicals, Newspapers	1	2	19	18	20	22	40	16
Online Information (Computer, CD-ROM software)	2	4	8	7	1	1	11	5
Audio-Visual Materials	0	0	2	2	3	3	5	2

References* - includes all information sources used by students in completion of research assignments; may or may not refer to a specific citation within the text of the student's final paper or report

Other** - includes personal writing, current events fact cards (used in school library)

Table 5.7

FREQUENCY DISTRIBUTION OF REFERENCES* LISTED IN STUDENT BIBLIOGRAPHIES, ANALYZED BY GRADE
(n = 58 bibliographies)

# of References* per Bibliography	Grade 10 Bibliographies (n = 20)		Grade 11 Bibliographies (n = 38)		Total Bibliographies (n = 58)	
	#	%	#	%	#	%
1	10	50%	3	7%	13	22%
2	4	20	3	8	7	12
3	3	15	7	18	10	17
4	0	0	4	11	4	7
5	2	10	5	13	7	12
6	0	0	5	13	5	9
7	1	5	4	11	5	9
8	0	0	0	0	0	0
9	0	0	4	11	4	7
10	0	0	0	0	0	0
11	0	0	3	8	3	5
>11	0	0	0	0	0	0

References* - include all information sources used by students in completion of research assignments; may or may not refer to a specific citation within the text of the student's final paper or report

Table 5.8

AGE OF MATERIALS CITED IN STUDENT BIBLIOGRAPHIES, ANALYZED BY SUBJECT

Publication Date of Materials	English		Social Studies		Biology		Total	
	References* (n=46)		References* (n=108)		References* (n=93)		References* (n=247)	
	#	%	#	%	#	%	#	%
Before 1971	9	20%	4	4%	10	11%	23	9%
1971-80	5	11	14	13	11	12	30	12
1981-85	9	19	15	14	10	11	34	14
1986-90	10	22	41	38	43	46	94	38
1991-93	10	22	27	25	17	18	54	22
Unknown/Not Supplied	3	6	7	6	2	2	12	5

References* - includes all information sources used by students in completion of research assignments; may or may not refer to a specific citation within the text of the student's final paper or report

Table 5.9

TYPES OF ASSISTANCE RECEIVED BY STUDENTS IN LIBRARIES, ANALYZED BY GRADE (n = 160 instances of assistance)

Types of Assistance	Grade 10 (n = 63 instances of assistance)		Grade 11 (n = 97 instances of assistance)		Total (n = 160 instances of assistance)	
	# of Instances of Assistance	% of Students (n = 46)	# of Instances of Assistance	% of Students (n = 83)	# of Instances of Assistance	% of Students (n = 129)
In-house*	36	78%	69	83%	105	81%
Outside**	17	37	17	20	34	26
Proxy***	10	22	11	13	21	16

In-house* - refers to assistance from librarians, teacher-librarians, library staff; also refers to assistance from persons who own or who have developed a personal information collection

Outside** - refers to assistance given by friends or family members who accompany the student to a library during the information retrieval stage of the research; assistance may include "moral support" as well as knowledge of a particular collection and/or experience in information location and retrieval skills

Proxy*** - refers to assistance obtained by students who ask other people to locate and retrieve information from various libraries for student assignments. The students do not accompany the other people to the libraries

Table 5.10

IN-HOUSE* ASSISTANCE RECEIVED BY STUDENTS,
ANALYZED BY SUBJECT
(n = 129 students)

Type of Library	English		Social Studies		Biology		Total	
	Students (n = 46)		Students (n = 43)		Students (n = 40)		Students (n = 129)	
	#	%	#	%	#	%	#	%
School	32	70%	32	74%	34	85%	98	76%
Public	8	17	12	28	6	15	26	20
College	0	0	0	0	0	0	0	0
University	0	0	4	9	1	3	5	4
Private/ Special	0	0	2	5	0	0	2	2
Home/ Personal	7	15	6	14	4	10	17	13

In-house* - refers to assistance from librarians, teacher-librarians, library staff; also refers to assistance from persons who own or who have developed a personal information collection

Chapter 6

CONCLUSIONS, IMPLICATIONS, AND QUESTIONS

I. Introduction

The purpose of this case study was to describe how students in one urban high school that has adopted the Focus on Research Model of research met their information needs in order to complete curriculum-based research assignments. In order to focus and guide the description of the relationship between student information-seeking behaviour and resource use, five main areas of exploration were delineated:

1) the mission, goals, objectives, and policy statements of the education infrastructure;

2) the development and implementation of the curriculum-based research assignments;

3) use of school library information resources by students;

4) use of information resources outside of the school library by students; and

5) information resources listed in the bibliographies of students completing curriculum-based research assignments.

The main sources of data were field observations, pertinent documents taken from all levels of the education infrastructure, student and teacher questionnaires, and interviews with the key informants (teachers and the Teacher-Librarian). By examining what the documents described as policy and recommended practice, and what the participants said they did, and then cross-checking with information gathered from field observation and student bibliographies, it was possible to develop a snapshot of information-seeking and resource use in one particular Alberta high school.

In considering the issues of trustworthiness, including transferability, it must be recognized that the size and range of the sample was very limited. The strength of the study lies not in the statistical analysis, but rather in the triangulation of data that allowed the identification of underlying themes or patterns that helped to describe the relationship between the information-seeking process and resource use by students.

This study is unique in its orientation toward the description of use of resources by students. Previous studies (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980; Wozny 1982; Hall 1986) described use of resources by students without identifying the type of information-seeking strategies being taught and implemented. This study is limited to resource use within a context in which a particular type of information-seeking strategy, the process-based Focus on Research Model, has been adopted and endorsed at both the school and school library level.

II. Summary of Findings

A summary of the patterns of information-seeking and resource use identified in this study are outlined under the five major areas of exploration.

A. The Mission, Goals, Objectives, and Policy Statements of the Education Infrastructure

The education system in Alberta advocates the teaching of process-based information-seeking strategies at all levels of the infrastructure. Alberta Education has developed goal and policy statements based on a philosophy that supports constructivism and the development of student skills for using information for lifelong learning. Handbooks and documents, such as Policy, Guidelines, Procedures and Standards for School Libraries in Alberta (1984), Teaching Thinking (1990b), and Focus on Research (1990a) have provided guidelines and models to describe how these goals and policies can be most effectively implemented in schools and school libraries. However, the study shows that there appears to be no direct, simple relationship between policy development and student learning. Implementation of the Model seems to have been hampered by the lack of a mandate for implementation of the related policies developed by Alberta Education. A host of other competing educational policies such as the increased emphasis on evaluation and a renewed focus on "the basics," plus rapidly changing environmental factors including severe reductions in school-based grants and increased pressure on teachers to accept reductions in salary while assuming heavier teaching loads, have combined to make the implementation of the Focus Model a slow process with a relatively low priority, particularly on the part of the teachers. Most of the teachers in the study appeared to have very little knowledge of and/or experience with the Focus Model.

In most cases, time constraints, competing demands, higher priorities, and lack of familiarity with the Model tended to encourage teachers to teach traditional information-seeking strategies rather than to invest greater amounts of time and risk in implementing a process-based approach to research as represented in the Focus Model.

B. The Development and Implementation of Curriculum-Based Research Assignments

The study showed that the development and implementation of the assignments influenced the information search strategies and student use of resources in the following areas:

1. **Time Frame:** The actual amount of time allotted to the completion of student assignments did not seem to have any effect on the type and number of resources used by students. When teachers identified time constraints, especially those linked to the completion of the course content requirements, they tended to emphasize creation of student information sharing products and students most often used more traditional search strategies (source and pathfinder strategies). When teachers did not feel as much pressure to complete course content and prepare students for final exams before the end of the semester, teachers spent more time in guiding students through the stages of the information search process and students tended to employ process-based approaches to information use.

2. **Roles of the Teaching Staff and Administration:** The Principal at this research site supported cooperative planning and teaching between the Teacher-Librarian and teachers, and library programs on a broad level.

In assignments in which the Teacher-Librarian assumed the role of a teaching colleague within a cooperative planning and teaching context, with major or equal responsibilities for planning, developing, and evaluating the learning experiences of students, more of the elements of the Focus Model were implemented. In assignments in which the Teacher-Librarian assumed the role of resource person and advisor to the teacher, primarily in the assignment planning and information retrieval stages, students tended to use more traditional search strategies.

3. Design of the Student Assignments: Three factors were used to describe the design of the assignments: objectives, structure, and teacher expectations regarding resource use. All of the assignments were designed as integral components of the course of study. In none of the assignments was the Focus Model directly taught as an information search strategy. Assignment requirements appeared to have a strong influence on information resource use by students. Grade 11 students were generally expected to use more information resources from a wider variety of sources. The type of information search strategy used by students seemed to be most strongly influenced by the degree of importance attached to information sharing products as compared to the degree of importance attached to information search strategies. These differences in emphasis were reflected in the ways in which student work was evaluated. In assignments in which the evaluation focused on products rather than search process, students generally employed more traditional search strategies.

4. Philosophy of Learning: The school in which the study was conducted actively supported the constructivist view of learning. It was the goal of all the teaching staff participating in the study to empower students to take control of learning experiences and develop skills for lifelong learning. However, most of the teachers regarded information search strategies as methods for locating information pertinent to the assigned topics. Only the Teacher-Librarian described the Focus Model as a tool to be used not only for locating information, but also for teaching critical thinking and skills for using information to create knowledge.

C. Student Use of School Library Information Resources

In a comparison of all information resources used by students, the school library played the most important role for students in the completion of their assignments. All of the teachers said they recommended the school library as a potential information source to their students. Students, on the average, consulted two libraries, one of which was the school library. Almost every student (98%) reported searching for information in the school library. Over three-quarters of all references listed in student bibliographies were taken from resources in the school library.

The study showed that students were not independent users of the school library, despite assumptions by several teachers that students had been taught necessary

library skills and that orientation classes held at the beginning of the year had familiarized students with the school library. More than three-quarters of the students requested and received some type of mediation and/or assistance in the school library, primarily from the Teacher-Librarian and, to a lesser extent, from teachers. The high incidence of mediation in the school library emphasized the importance of the role played by the Teacher-Librarian. Over one-quarter of the students gained assistance in the school library from friends and perhaps family members (probably siblings) who either helped students search in the library or searched for information without the students being present. Students appeared to need and expect assistance in the school library setting.

D. Student Use of Information Resources Outside of the School Library

Information resources beyond the school library played a much smaller role for students in the completion of assignments. Home/Personal libraries were searched by slightly more than half of the students. Public libraries were searched by slightly less than half of all students. University, college, and private/special libraries were searched by less than 10% of the students.

A much smaller percentage of students received mediation and assistance in other libraries as compared to the school library. The greatest amount of assistance was received in the public library, with about one-fifth of all students indicating they had received some type of aid. Over 10% of all students received assistance in home/personal libraries.

The number of libraries searched and the number of instances of mediation appeared to be affected by the maturity of the students, the topic and requirements of the assignment, and the expectations of the teachers. Grade 10 (English) students tended to search fewer libraries and fewer non-library sources, but requested and received more mediation and assistance in the libraries. Grade 11 students (Social Studies and Biology) tended to search more types of libraries and showed a tendency to use more assistance from library staff and less assistance from friends and family than did Grade 10 students.

Non-library sources of information played a minor role in student searches. Television programs were the most frequently consulted non-library source of information.

E. Information Resources Cited in the Bibliographies

Most students searched more than one type of library but only a small percentage of references cited materials from libraries other than the school library. Social Studies bibliographies tended to include materials from two libraries, whereas the majority of English and Biology bibliographies included materials from one library only. The median number of references per bibliography was 3 with the greatest variation between Grade 10 (median of 1) and Grade 11 (median of 4.4) bibliographies.

Monographs were the most frequently cited type of material in the bibliographies, comprising slightly more than half of the total number of references. Encyclopedias were the second most frequently cited type of material. Almost one-fifth of all references were taken from encyclopedias. Journals and newspapers were cited only slightly less often than encyclopedias. Grade 10 bibliographies contained a higher percentage of references to monographs compared to Grade 11. Grade 11 bibliographies cited a higher percentage of journals and newspapers than did Grade 10. Other types of materials found in libraries including audio-visual, online, and vertical file materials were rarely cited in bibliographies. The bibliographies contained no references to non-library sources, in spite of the fact that almost one-third of the students indicated that they had watched television programs related to their assignment topics.

The publication dates of materials cited in the bibliographies represented a wide range in currency. However, well over half of the references cited materials that were published after 1985. This suggested that students were aware of publication dates and considered currency of information to be important. Grade 11 bibliographies tended to cite more current information sources than did Grade 10 bibliographies.

III. Implications

This case study has attempted to describe information-seeking patterns and resource use in one high school that has adopted the Focus on Research Model. Although the description is unique to one school and one limited time period, it is possible to identify some themes and patterns that may apply in other schools and other library programs. The study also raises a number of issues that point to the need for further research.

A. Implications for Practice

1. Relationship between the development of policy, the adoption of policy, and the implementation of policy

There appears to be no simple relationship between the creation of policy at the upper level of the education infrastructure and the translation of that policy into innovative programs that affect student learning experiences at the school and school library level. It is not enough for the Teacher-Librarian to understand the role of the Focus Model and to have responsibility for implementing the Model. It is not enough for the administration to express support for library programs and cooperative planning and teaching. Implementation of a process-based approach to student research requires the awareness and understanding of all of the teaching and administrative staff. It is not an innovation that can be contained within the library; rather it is an innovation that must be understood and implemented on a school-wide basis. Oberg (1992) described the importance of the adoption stage in the implementation of educational innovations:

> During that implementation stage, it has been found to be essential for those involved to develop an understanding of the innovation (conceptual clarity) and of the particular context within which the innovation is being introduced (mutual adaptation). . . . Without the development of a deep understanding, during the adoption stage, of the innovation and what impact its implementation will have both on the context and the innovation itself, the task of implementation is likely to be much more difficult and less successful. (101)

Translation of policies into innovative teaching programs requires time and support. Changes in teaching practice are not made easily or quickly. Support is required in many forms–funding, setting of realistic goals and objectives, opportunities for learning and practising the innovation in a non-threatening environment, and provision of recognition and rewards for those who incorporate the innovation into their teaching strategies.

2. Importance of a school-wide team approach for the teaching of the research process and resource use

Teachers, administrators and the Teacher-Librarian all play essential roles in the successful implementation of a process approach to information use (Kuhlthau 1993a). Team members must be committed to the innovation and willing to spend considerable time in planning, designing, and assessing activities.

Research has shown that four components of training–theory, demonstration, practice, and feedback–are necessary to help teachers acquire not only the external teaching patterns that translate an innovation into active examples of practice in the classroom context, but also to help teachers develop the understandings that allow them to adapt the innovations to meet the needs of their unique teaching contexts (Showers, Joyce, and Bennett 1987).

The Focus on Research handbook provides guidelines to teaching staff, not a set of techniques and discrete behaviours. The document reflects a constructivist philosophy of learning that allows flexibility and adaptation in practice on the part of the teachers. However, administrators and teaching staff at the school level require inservice opportunities in order, first of all, to develop an awareness of the innovation.

> A basic level of knowledge or skill in a new approach is necessary before teachers can "buy in" to it. (Showers, Joyce, and Bennett 1987, 79)

In this study, it appeared that the adoption stage had been omitted from the change process. The Teacher-Librarian had been given the responsibility of implementing the Focus Model in the School, but most of the teaching staff did not have a basic understanding of either the theory or practice associated with the Model.

In the traditional school organization, the classroom teachers are the ones who have the greatest control over the kind of information-seeking and resource use that students employ. In order for the Focus Model to be implemented, according to Kuhlthau (1993a), it would be necessary for teachers to relinquish some of their autonomy and control over the learning experiences of their students. They must be willing to take risks and become more vulnerable to potential criticism as they allow closer scrutiny of their teaching practices. They would continue to provide the content and the context of the student research assignments but they would work in conjunction with the Teacher-Librarian in order to design their assignments around the information search process. Throughout the process, teachers would remain active in identifying problems, designing instructional strategies to enhance learning, and assessing the learning outcomes. Department heads and subject area specialists would also have a role to play on the team. They would determine how the research process could be best used to achieve curriculum and school-wide goals.

Administrators would be important members of the team. First, the administrators need to understand and support the innovation at a theoretical level. Second, the administration would provide the environment necessary for cooperative planning and teaching. This might include flexible scheduling, time for planning and collaborating, and recognition and rewards for team members.

The Teacher-Librarian, the third essential member of the team, would provide the resources (collection and reference services), define the information search process, and coordinate the program at a school-wide level. In the initial stages the Teacher-Librarian would assume responsibility for building the foundation for adoption and implementation of the program. At all stages, the Teacher-Librarian would be an initiator and facilitator of the information search process and an active member of the teaching staff.

3. The role of mediation in the research process and resource use

In this study, most students requested and received some type of assistance or mediation during their information searches, usually in the school library. This suggests that goals to make students independent users of libraries, particularly school libraries, may not be realistic. In spite of library orientations and library skill lessons, most students received some type of individual assistance, even in the school library. Students may be seeking assistance for reasons other than just the location of information. Kuhlthau describes two types of mediation:

> Information-related mediation assists with access to information. Process-related mediation assists with learning from the use of information. Uncertainty underlies both product and process and is likely to be compounded in actual situations of information-seeking. (Kuhlthau 1993b, 134)

The role of mediation in the information search process and resource use should be recognized as important to student learning. The Teacher-Librarian and, to a lesser extent, the teachers play key roles as mediators in the school library context. Kuhlthau (1993b) has identified five levels of mediation and five corresponding roles of the librarian: organizer, locator, identifier, advisor, and counsellor. It is the responsibility of the Teacher-Librarian to identify the student's stage in the information process and the

complexity of the student's problem in order to determine what type of mediation is necessary.

Mediation is demanding and time-consuming work. However, the amount of mediation that occurs in the school library offers an opportunity for the Teacher-Librarian to have a profound effect on the shaping of the information search strategies and resource use of students.

Grade 10 students in this study tended to use a great deal of non-professional mediation in their information searches, both in the school library and in other libraries. This may be a result of their lower level of comfort and familiarity with libraries and the information search process. Carefully organized group work may help students who are lacking in confidence and experience to move through the information search process and use library resources more successfully.

4. The role of the school library

In this study, the school library served as the most important source of information and mediation for students. There was some indication, with supporting views from the Teacher-Librarian, that the school library is becoming even more important in student information searches than it was fifteen years ago. This may be due to an increasingly focused policy of collection development in today's school libraries. With the spiralling costs of collection materials and decreasing amounts of funding available for collection development, school libraries have chosen first and foremost to support the curriculum and the research topics arising out of the curriculum. According to the Teacher-Librarian, students in this study were more likely to find the most relevant, current information on their research topics in the school library, particularly if the topics are very specific to the curriculum. If school library staffing is adequate, this situation offers an ideal teaching situation with the potential of guiding individuals or small groups of students through their information searches and teaching them how to use the Focus Model to create knowledge from information.

In addition, teachers and teacher-librarians need to be aware of other information sources and continue to make efforts to share resources, particularly between schools within the school district, but also between different types of libraries and other information sources outside of the school. Students will continue to need process-related

mediation from teachers and teacher-librarians. However, there is a potential for the school library to act as a facilitator in student use of other types of libraries.

5. The relationship between information use and format of materials from which the information is taken

Student bibliographies reflected a strong preference for print materials as information resources. This pattern of reference may mean that, in this study, students chose to limit their searches to print resources. Another explanation may be that students used other types of information sources, but did not consider them as appropriate to be included in their bibliographies, did not know how to cite them, or did not know how to abstract from them. Whatever the case, the pattern of bibliographical references suggests that students consider print sources to be more useful and more suited to curriculum-based research assignments. This pattern has not changed in the past fifteen years, in spite of the increased availability of information in a wide diversity of formats in all types of library and non-library contexts. Mancall (1978) identified a similar pattern of resource use in her study in the late 1970s:

> Students are using materials in a pattern that suggests they do not view resources in all formats as of equal importance for this type of assignment. (176)

Mancall (1978) advocates training in a subject rather than a format approach to information use. The Focus Model attempts to address this problem at a basic level in the planning stage. Students are taught to identify information sources according to subject, rather than by format. However, in this study, the types of information-seeking strategies appeared to have little or no effect on information use patterns reflected in the bibliographies.

Teachers have the greatest potential for changing patterns of information use. Assignment requirements and evaluation techniques can be used to encourage students to search for information in formats other than print. Students need to be supported in their use of diverse information formats. This means that the school library requires a collection and level of staffing that will allow students to locate non-print information pertinent to their topics. Students also need to be rewarded for their efforts to use non-print information sources. Rewards can include recognition for incorporating information

from diverse formats in information sharing presentations and opportunities to earn extra marks for information searches that include information resources in non-print formats.

In addition, it is important that teachers model information use that is not limited to print formats in the classroom. If teachers use information taken primarily from textbooks and monographs to present curriculum content to students, it is not surprising that students assume that information resources in the print format are the most valid.

B. Implications for Research

1. Role of mediation in the information search process and in resource use in the school library

Students in this study received a great deal of assistance within the school library. Much of the assistance was given by library staff, usually the Teacher-Librarian and, to a lesser extent, the classroom teacher. In the one assignment in which students used process-based information search strategies, the Teacher-Librarian spent considerably more time working with the students than in any of the other five assignments.

Kuhlthau (1993b) found that students usually turn to friends and family for process-related mediation and expect library staff to assist with information-related mediation.

> The study revealed that students attributed a limited, source-oriented role to librarians while they frequently reported making use of a variety of informal mediators in the process of their library research. The case studies confirmed the view of the librarian's role as very limited and source-oriented. (131)

Although it may be true that students still consider teacher-librarians to be locators of information, in this study the Teacher-Librarian tried to use information-related mediation requests by students as opportunities to offer process-related guidance as often as possible. The Teacher-Librarian noted that lack of time and other duties in the library often made it difficult to provide the kind of assistance that students really needed in order to "make meaning from information" (Teacher-Librarian Interview II). This study did not attempt to describe the nature of the mediation (information-related or process-related) that students received in each of the assignments. Further study is needed to investigate the relationship between type and amount of mediation, and type of information search strategy employed by students.

2. Role of collaboration in the information search process and resource use

The frequent use of non-professional mediation (friends and family) by Grade 10 students and the organization of group assignments, particularly in Grade 11, raises a question about the role of collaboration in the information search process. This study found that group bibliographies usually included more references than did individual student bibliographies. The Grade 10 students may have been using friends and family as sounding boards for their new concepts and ideas rather than as locators of information. In both cases, it appeared that collaboration may have facilitated the information search process and resource use by students.

Kuhlthau (1993a) describes a collaborative environment in which questions and understandings are shared as part of the constructivist philosophy upon which the Focus Model is built. In her list of ten critical elements of a successful program for teaching the process approach to information use, she includes the following:

> There was a collaborative learning environment with "everyone on task." Students of different ability levels worked side by side and learned from one another. (Kuhlthau 1993a, 16)

Pitts (1992) also notes that one of the elements of constructive learning is social interaction. Further study is needed to investigate and compare the information search processes and resource use of individual students and student groups.

3. Interpretation and implementation of the Focus Model

When the teachers in this study were shown the Focus Model, most of them said that they were using the main elements of the Model in their assignments and instruction, even though they were not teaching the Model in a direct manner. However, close observation of the different classes and information taken from the interviews suggested that the Model may be misleading and difficult to implement unless teachers have extensive knowledge of the theory of the information search process as developed by Kuhlthau, upon which the Model is based. Two of the areas vulnerable to misinterpretation appeared to be that of planning and forming a focus. Kuhlthau emphasizes the importance of these two stages and the problems that arise if focus formulation does not occur.

> Users perceive the task of the search process as primarily to gather information even in the early stages of vague, unfocused thinking. Users do not clearly understand the task of forming a focused perspective from the information encountered in the early stages of the search process. . . . lack of a personal perspective may be the result of the notion that the purpose of a search is to reproduce an author's view rather than to make sense within one's own frame of reference, a perception which may inhibit the process of construction during the search process. (Kuhlthau 1993b, 62-63)

Several of the teachers indicated that they had chosen to do most of the planning for the students. This may suggest that the information retrieval stage was considered to be of more value or importance. Two of these teachers noted that many students had failed to do much critical thinking and evaluation of information in their final products. Furthermore, it appeared that most of the teachers did not recognize the importance of planning and focus formulation in the Model. In fact, when I asked the Teacher-Librarian, who was very knowledgeable in both the Model and in the research and theory developed by Kuhlthau, to indicate where focus formulation occurred in the Model, the Teacher-Librarian admitted to some confusion and uncertainty.

Some of the confusion regarding implementation of the Model may be a result of instructions in the Focus on Research handbook for teachers and teacher-librarians:

> Teachers who are new to integrating research are advised to focus on the teacher directed approach to implementing research activities. A research activity does not have to include all stages and skills. (Alberta Education 1990a, 30)

Several teachers in this study interpreted the preceding statement to mean that they could continue to focus on information retrieval and information processing, without any review of process at the end of each stage, and still be implementing the Focus Model of research. Results of the study indicated that all students did practise at least some of the skills listed in the information retrieval and information processing stages. However, only three of the eleven classes appeared to employ a process approach to information use. Those three classes completed an assignment that emphasized planning, focus formulation, and review of the process. The Teacher and the Teacher-Librarian invested a great deal of time in providing guidance to the students as they worked through the process. Further research is needed to determine what stages and skills of the Focus Model are essential and what stages and skills are optional in the implementation of process-based research. Similar studies conducted in other schools that are implementing

the Focus Model will help to build a more complete understanding of the key elements of the information search process.

4. Relationship between the stages of the Focus Model and the information resources being used in each stage

This study did not attempt to describe the stages of the information search process and any differences that might occur in the types and location of information resources being used within each stage. Kuhlthau (1993b) suggests that students using a process-based approach would use general information sources like encyclopedias to get an overview of a topic and to become familiar with some of the issues relating to the topic. More research is needed to track information resource use within the stages of the Model. Student journals could be useful in studying the progress of students through the stages of the Model, as well as describing the types of resources used. Results from such a study may help in identifying the stages in which individual students need more mediation. It would also assist the Teacher-Librarian in planning information-related and process-related mediation in the school library.

5. Relationship between information resources searched and information sources cited in bibliographies

Almost all students indicated that they searched a variety of libraries and other information resources. However, most of the materials cited in student bibliographies were taken from sources located in the school library. This raises some interesting questions. Did the libraries and other resources not have information pertinent to their topics? Did the other libraries and information resources have relevant information which the students were unable to locate? Were the relevant materials already signed out by other patrons? Did students find relevant information but judged the information to be of lesser value and importance than the information located in the school library? Did students locate the same information in libraries and information resources outside the school but found the format, focus, and reading level of information sources in the school library to be more appropriate to their needs? More study is needed to determine why most students appeared to be unsuccessful (as was reflected in the materials cited in their bibliographies) in finding relevant information outside the school library.

The references included in the bibliographies suggested a strong preference on the part of students for the use of print materials in the information search process. This may have indicated that students were unsure of how to cite some of the information taken from non-traditional information sources and therefore decided to omit it from the bibliographies. However, as Mancall (1978) and Hall (1986) suggest, it is more likely that students believed that information taken from print formats was of greater value than information taken from non-print formats. More research is needed to describe the attitudes that students have toward information in diverse formats. A study of how students use information taken from different formats to create new concepts would be useful for collection development in the school library and in planning teaching strategies in both the classroom and the school library.

IV. Issues of Trustworthiness: Questions for Consideration

This case study is the description of the planning, implementation, and evaluation of six curriculum-based research assignments completed by Grade 10 and 11 students within one urban high school. The study focused upon the information search process and resource use of students during these six assignments. Yin (1989) noted that the case study is a research design that is particularly suitable for contexts in which the variables of the phenomenon cannot be manipulated. "Interpretation in context" (Cronbach 1975, 123), especially a context as complex as a school library program, invariably leads to the question of whether the most important variables have been identified for study and analysis.

A. The effect of the size of the student sample on the validity of conclusions and implications

The student participation rates for the study were relatively low. Only half of the students completed and returned the parental consent and student assent forms, in spite of frequent reminders by me, the teachers, and the Teacher-Librarian. The percentage of Bibliography Sheets returned to me was even lower. Slightly fewer than one-third of the students completed the Bibliography Sheets. Many students were not interested in participating in the study as soon as they heard that they would receive no

credit for participation. The prevailing attitude seemed to be that they were busy and that if "it didn't count toward marks," then they were not willing to take on any extra work.

This leads me to wonder what types of students were willing to participate. Was it students who were more anxious to please adults? Was it students who tended to be higher achievers in the classroom? What types of students chose not to participate? How did the low rate of participation affect the representativeness of the data gathered in the study and the validity of the patterns of information-seeking and resource use that were indicated? How would the results have been influenced if students had been offered rewards in the form of extra marks for participation in the study? It is possible that the results would have been different if students had perceived this study and their participation in the study as more useful to them as individuals.

B. The effect of the researcher as primary data gatherer and interpreter of data

I was the primary agent of data collection and analysis. I brought to the study an intense and long-term interest in how people create knowledge from information. My experience includes several years as an educator in the classroom and in the school library. As a result of my work in schools, I have become an advocate of school library programs and teacher-librarians. Three years ago, I once more became a full-time student in a master's program in Library and Information Studies. My course work has provided me with firsthand experience and a renewed interest in the information search process.

There is no doubt that my education, interests, and background have brought a certain perspective to the case study. This leads one to wonder if the results of the study would have different had the study been done by someone else with a different background. How would the results been affected had the study been done by a practising teacher-librarian? By the Teacher-Librarian working at the research site? By a teacher? By a school administrator? By a consultant from Alberta Education or the School Board? It is possible that researchers with different perspectives might focus on very different aspects of the phenomenon and come to very different conclusions.

C. The effect of the researcher's presence on the participants in the study

The Hawthorne effect has been well documented in the literature of research methodologies. I recognized that some of the key informants may have felt that they or their teaching techniques were being assessed by me. The teaching staff were working in a context of funding cuts and loss of teaching positions. Possible distortions might have crept into the data because key informants were unwilling to take risks that could have the potential to reflect in a negative way on their teaching performance. Therefore, respondents might have been tempted to tell me what they thought was politic. Distortions may have also occurred due to the relationship that was built between me and the respondents. Several of the respondents wanted to determine my views regarding education and library programs during informal conversations before their taped interviews. Some of the respondents appeared to be more comfortable with me when they discovered that I had a background in public education and school libraries. Results of the study might have been different had it been conducted at a different time or had the key respondents perceived me in a different light.

D. Degree of generalizability of the conclusions and implications of the study

According to Kennedy (1979), "generalizability is ultimately related to what the reader is trying to learn from the case study" (672). Readers must determine for themselves what parts of the study apply to their situation and what elements do not apply.

Questions arise as to what elements or components are key to any type of comparison. For example, is adoption and implementation of the Focus Model one of the components that must be present to make a valid comparison? Or is support for the philosophies of constructivism and cooperative planning and teaching a key component? Do the patterns of resource use by students hold true as described for most school libraries, regardless of the type of information search strategy that is being taught? In fact, the results of studies which do not differentiate between the types of search strategies used (Mancall 1978; Mancall and Drott 1979; Drott, Mancall, Barber, and Robinson 1980; Wozny 1982; and Hall 1986), suggest that the patterns of resource use by students are similar. Because this is one of the first studies done on the relationship between a

particular type of information search strategy, the process-based Focus Model, and resource use by students, some practitioners may find it difficult to determine the level of generalizability for their particular situations. This is because it is not easy to establish with any degree of authority just how typical the phenomenon described in the case study is. Additional case studies of other sites in which the Focus Model is being implemented need to be completed.

V. Conclusion: Two Steps Forward and One Step Not Taken

It has been more than fifteen years since Mancall (1978) identified the need for teaching students to utilize a subject rather than a source approach to the use of information resources. Although the current study found very little change in patterns of resource use by students, there were some encouraging signs of progress in the teaching of skills for using information for learning. First, there was a greater understanding of the complexity of the information search process, as described in the research of Kuhlthau (1985a, 1985b, 1987, 1989, 1991, 1993b). In this study, it was the Teacher-Librarian who had the background knowledge and experience with the process-based approach to teaching information skills. The Teacher-Librarian had taken responsibility for building a foundation for implementing the Focus Model in school library programs. To this end, the Teacher-Librarian was actively sharing knowledge of the current research with other members of the teaching staff and the administration, and assisting teachers who were who were open to innovation in implementing elements of the Focus Model in their research assignments for students.

Second, there was a strong commitment on the part of all the teachers in the study to a constructivist philosophy of learning, which included goals of empowering students to take control of their learning experiences and helping students to acquire lifelong learning skills. Several of the teachers showed an openness to innovations in assignment designs and teaching strategies, including new ways of collaborating through cooperative planning and teaching.

However, there appeared to be one link that had not been forged, and that was the link between the goals and objectives arising from the constructivist philosophy and the potential use of the Focus Model as a tool for attaining those goals. It may be that the Focus Model in its current form does not adequately meet the needs of teachers who

are seeking to adopt a process-based approach to information use. It may also be the case that it is still too early in the adoption stage to assess any changes in information-seeking behaviour and resource use by students that might occur when the Model has been fully implemented. The continued commitment of the teaching staff and the shared vision of the Teacher-Librarian will be crucial to the accomplishment of that final step. However, a solid foundation is being built, step by step, and the progress is encouraging.

BIBLIOGRAPHY

I. The Research Process

Alberta Education. 1978. The goals of basic education for Alberta. Edmonton, AB: Author.

_____. 1983. Position paper on school libraries in Alberta. Edmonton, AB: Author.

_____. 1990a. Focus on research: A guide to developing students' research skills. Edmonton, AB: Author.

_____. 1990b. Teaching thinking. Edmonton: Author.

Belkin, N.J. 1978. Information concepts for information science. Journal of Documentation 34(March): 55-85.

Belkin, N.J., R.N. Oddy, and H.M. Brooks. 1982. ASK for information retrieval: Part I. Background and theory. Journal of Documentation 38(June): 61-71.

Bloom, Benjamin S., ed. 1956. Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. New York: David McKay.

Craver, Kathleen W. 1990. Critical thinking: Implications for library research. In The research of school library media centers, ed. Blanche Woolls, 121-32. Castle Rock, CO: Hi Willow Research.

Dervin, Brenda. 1977. Useful theory for librarianship: Communication, not information. Drexel Library Quarterly 13(Fall): 16-32.

Dervin, Brenda. 1983. An overview of sense-making research: Concepts, methods and results to date. Seattle: School of Communications, University of Washington.

Eisenberg, Michael B., and Michael K. Brown. 1990. Current themes regarding library and information skills instruction. In The research of school library media centers, ed. Blanche Woolls, 99-110. Castle Rock, CO: Hi Willow Research.

Eisenberg, Michael B., and Robert E. Berkowitz. 1988. Curriculum initiative: An agenda and strategy for library media programs. Norwood, NJ: Ablex.

Eshpeter, Barry, and Judy Gray. 1989. Preparing students for information literacy: School library programs and the cooperative planning process. Calgary: Calgary Board of Education.

Ford, Nigel. 1980. Relating "information needs" to learner characteristics in higher education. Journal of Documentation 36(June): 99-114.

Haycock, Ken. 1979. What is a school librarian? Towards defining professionalism. Emergency Librarian 6(May-August): 10-14.

Horne, Esther. 1983. Question generation and formulation: An indication of information need. Journal of the American Society for Information Science 34(January): 5-15.

Jakobovits, Leon A., and Diane Nahl-Jakobovits. 1987. Learning the library: Taxonomy of skills and errors. College and Research Libraries 48(May): 203-14.

Kelly, George A. 1963. A theory of personality: The psychology of personal constructs. New York: Norton.

Krapp, JoAnn Vergona. 1979. Teaching research skills: A critical-thinking approach. School Library Journal 34(Fall): 32-35.

Kuhlthau, Carol Collier. 1985a. A process approach to library skills instruction. School Library Media Quarterly 13(Winter): 35-40.

_____. 1985b. Teaching the library research process: A step-by-step program for secondary school students. West Nyack, NY: The Center for Applied Research in Education.

_____. 1987. An emerging theory of library instruction. School Library Media Quarterly 16(Fall): 23-31.

_____. 1988a. Developing a model of the library search process: Cognitive and affective aspects. Reference Quarterly 28(Winter): 232-42.

_____. 1988b. Longitudinal case studies of the information search process of users in libraries. Library and Information Science Research 10(July-September): 257-304.

_____. 1988c. Meeting the information needs of children and young adults: Basing library media programs on developmental states. Journal of Youth Services in Libraries 2(Fall): 51-57.

_____. 1988d. Perceptions of the information search process in libraries: A study of changes from high school through college. Information Processing and Management 24: 419-27.

_____. 1989. The information search process of high-, middle-, and low-achieving high school seniors. School Library Media Quarterly 17(Summer): 224-26.

_____. 1990. Information search process: A summary of research and implications for school library media programs. In The research of school library media centers, ed. Blanche Woolls, 111-20. Castle Rock, CO: Hi Willow Research.

_____. 1991. Inside the search process: Information seeking from the user's perspective. Journal of American Society for Information Science 42(June): 361-71.

_____. 1993a. Implementing a process approach to information skills: A study identifying indicators of success in library media programs. School Library Media Quarterly 22(Fall): 11-18.

_____. 1993b. Seeking meaning: A process approach to library and information services. Norwood, NJ: Ablex.

Kuhlthau, Carol C., Betty J. Turock, Mary W. George, and Robert J. Belvin. 1990. Validating a model of the search process: A comparison of academic, public and school library users. Library and Information Science Research 12(January-March): 5-31.

Loerke, Karen. 1992. Developing a focus in the research process. Alberta Learning Resources Journal 11: 7-13.

Mancall, Jacqueline C., Shirley L. Aaron, and Sue A. Walker. 1986. Educating students to think: The role of the school library media program. School Library Media Quarterly 15(Fall): 18-27.

Marzano, Robert J., Ronald S. Brandt, Carolyn Sue Hughes, Beau Fly Jones, Barbara Z. Presseisen, Stuart C. Rankin, and Charles Suhor. 1988. Dimensions of thinking: A framework for curriculum and instruction. Alexandria, VA: The Association for Supervision and Curriculum Development.

Nahl-Jakobovits, Diane, and Leon A. Jakobovits. 1985. Managing the affective micro-information environment. Research Strategies 3(Winter): 17-28.

_____. 1988. Problem solving, creative librarianship, and search behaviour. College and Research Libraries 49(September): 400-408.

_____. 1990. Learning principles and the library environment. Research Strategies 8(Spring): 74-81.

_____. 1992. Pre-search: Intellectual access to information. School Library Journal 38(March): 168-70.

Oberg, Dianne. 1992. Adoption of a school library program by Sherwood Park Catholic Separate School District: A promising beginning. Ph.D. diss., University of Alberta.

Paisley, William. 1980. Information and work. In Progress in communication sciences, Vol.2, eds. Brenda Dervin and Melvin Voigt, 113-66. Norwood, NJ: Ablex.

Pitts, Judy M. 1992. Constructivism: Learning rethought. School Library Media Annual 10: 14-24.

Showers, Beverly, Bruce Joyce, and Barrie Bennett. 1987. Synthesis of research on staff development: A framework for future study and a state-of-the-art analysis. Educational Leadership 45(November): 77-87.

Stripling, Barbara K., and Judy M. Pitts. 1988. Brainstorms and blueprints: Teaching library research as a thinking process. Englewood, CO: Libraries Unlimited.

Taylor, Robert S. 1968. Question-negotiation and information seeking in libraries. College and Research Libraries 29(May): 178-94.

II. Collection Development and Collection Use

Alberta Education. 1984. Policy, guidelines, procedures and standards for school libraries in Alberta. Edmonton, AB: Author.

_____. 1985. Focus on learning: An integrated program model for Alberta school libraries. Edmonton: Author.

American Association of School Librarians and Association for Educational Communications and Technology. 1988. Information Power: Guidelines for School Library Media Programs. Washington, D.C.: American Library Association and Association for Educational Communications and Technology.

Callison, Daniel. 1990. Collection development in school library media centers. In The research of school library media centers, ed. Blanche Woolls, 231-58. Castle Rock, CO: Hi Willow Research.

Darling-Hammond, Linda. 1993. Reframing the school reform agenda: developing capacity for school transformation. Phi Delta Kappan 74(June): 753-61.

Drott, M. Carl, and Jacqueline C. Mancall. 1980. Materials students use: A direct measurement approach. In School library media centers: Research studies and the state-of-the-art, ed. David V. Loertscher, 21-30. Syracuse University: ERIC Clearinghouse on Information Resources.

Drott, M. Carl, Jacqueline C. Mancall, Raymond W. Barber, and Tracey D. Robinson. 1980. A quantitative inventory of resource development and utilization for metropolitan high school students. Final Report. Philadelphia, PA: Drexel University School of Library and Information Science. (ERIC Document Reproduction Service No. ED 188 638).

Hall, Barbara A. 1986. Patterns of grade ten student information seeking behaviour. Master's Thesis, University of Alberta.

Loertscher, David V. 1985. Collection mapping: An evaluation strategy for collection development. Drexel Library Quarterly 21(Spring): 9-21.

Mancall, Jacqueline C. 1978. Resources used by high school students in preparing independent study projects: A bibliometric approach. Ph.D diss., Drexel University.

_____. 1991. (Un)changing factors in the searching environment: Collections, collectors, and users. School Library Media Quarterly 19(Winter): 85-89.

Mancall, Jacqueline C., and Christopher C. Swisher. 1983. Developing collections for the eighties and beyond. School Library Media Annual 1: 255-74.

Mancall, Jacqueline C., and M. Carl Drott. 1979. Materials used by high school students in preparing independent study projects: A bibliometric approach. Library Research 1(Fall): 223-36.

_____. 1980. Tomorrow's scholars: Patterns of facilities use. School Library Journal 26(March): 99-103.

_____. 1983. Measuring student information use: A guide for school library media specialists. Littleton, CO: Libraries Unlimited.

Van Orden, Phyllis J. 1988. The collection program in schools: Concepts, practices and information sources. Englewood, CO: Libraries Unlimited.

Wallace, Danny P. 1987. A solution in search of a problem. Library Journal 112(May 1): 43-47.

Wilson, P. 1977. Public knowledge, private ignorance: Toward a library and information policy. Westport, CT: Greenwood.

Wozny, Lucy Anne. 1982. Online bibliographic searching and student use of information: An innovative teaching approach. School Library Media Quarterly 11(Fall): 35-42.

III. Methodological Resources

Adelman, C., D. Jenkins, and S. Kemmis. 1983. Rethinking case study: Notes from the Second Cambridge Conference. In Case study: An overview. Case Study Methods 1 Series. Victoria, Australia: Deakin University Press.

Babbie, Earl R. 1986. Observing ourselves: Essays in social research. Belmont, CA: Wadsworth.

_____. 1992. The practice of social research. 6th ed. Belmont, CA: Wadsworth.

Berg, Bruce L. 1989. Qualitative research methods for the social sciences. Boston, MA: Allyn and Bacon.

Blumer, H. 1969. The methodological position of symbolic interactionism. Chap. in Symbolic interactionism. Englewood Cliffs, NJ: Prentice-Hall.

Bogdan, R.C., and S.K. Biklen. 1982. Qualitative research for education: An introduction to theory and methods. Newton, MA: Allyn and Bacon.

Brannen, Julia. 1992. Combining qualitative and quantitative approaches: An overview. In Mixing methods: Qualitative and quantitative research, ed. Julia Brannen, 3-37. Aldershot, England: Avebury.

Broadus, Robert N. 1987. Toward a definition of 'bibliometrics'. Scientometrics 12: 373-79.

Busha, Charles H., and Stephen P. Harter. 1980. Research methods in librarianship: Techniques and interpretation. San Diego: Academic Press.

Cronbach, L.J. 1975. Beyond the two disciplines of scientific psychology. American Psychologist 30(February): 116-27.

Erickson, Frederick. 1986. Qualitative methods in research on teaching. In Handbook of research on teaching, 3d ed., ed. M.C. Whittrock, 119-61. New York: Macmillan.

Glaser, B.G. 1978. Theoretical Sensitivity. Mill Valley, CA: Sociology Press.

Glaser, Barney, and Anselm Strauss. 1967. The discovery of grounded theory: Strategies for qualitative research. Chicago: Aldine.

Guba, Egon G., and Yvonna Lincoln. 1981. Effective evaluation. San Francisco: Jossey-Bass.

Holsti, O.R. 1969. Content analysis for the social sciences and humanities. Reading, MA: Addison-Wesley.

Kennedy, M.M. 1979. Generalizing from Single Case Studies. Evaluation Quarterly 3(November): 661-79.

Lijphart, A. 1971. Comparative politics and comparative method. American Political Science Review 65(September): 682-94.

Lincoln, Yvonna S., and Egon G. Guba. 1985. Naturalistic Inquiry. Beverly Hills, CA: Sage.

MacDonald, B., and R. Walker. 1977. Case study and social philosophy of educational research. In Beyond the numbers game, eds. D. Hamilton, Barry MacDonald, Christine King, David Jenkins, and Malcolm Parlett, 181-89. Berkeley, CA: McCutchan.

McMillan, J.H., and S. Schumacher. 1984. Research in education. Boston: Little, Brown & Co.

Merriam, Sharan B. 1988. Case study research in education: A qualitative approach. San Francisco, CA: Jossey-Bass.

Morgan, Gareth, and Linda Smircich. 1980. The case for qualitative research. Academy of Management Review 5(October): 491-500.

Rock, Paul. 1982. Symbolic interactionism. In Qualitative methods. Vol. II, Handbook of social science methods, eds. Robert B. Smith and Peter K. Manning, 33-47. Cambridge, MA: Ballinger.

Sanders, J.R. 1981. Case study methodology: A critique. In Case study methodology in educational evaluation: Proceedings of the 1981 Minnesota Evaluation Conference, ed. W.W. Welsh, 35-47. Minneapolis: Minnesota Research and Evaluation Center.

Schrader, Alvin M. 1981. Teaching bibliometrics. Library Trends 30(Summer): 151-71.

Stone, P.J., D.C. Dunphy, M.S. Smith, and D.M. Ogilvie. 1966. The general inquirer: A computer approach to content analysis. Cambridge, MA: MIT Press.

Walker, R. 1980. The conduct of educational case studies: Ethics, theory and procedures. In Rethinking educational research, eds. W.B. Dockerell and D. Hamilton, 30-63. London: Hodder & Stoughton.

Yin, Robert K. 1989. Case study research: Design and methods. Beverly Hills, CA: Sage.

APPENDIX A

I. Sample Letter and Consent Form

A. Letter to Parents

February, 1993

To: Parents

This is an invitation for your son/daughter to participate in a university study in the field of school libraries. High school students frequently complete research projects as part of their course requirements. I wish to examine how and where students gather information for their research projects by studying student bibliographies and administering student questionnaires upon completion of an assigned research project. The questionnaires can be completed very quickly as most responses require only an "X" to indicate the preferred choice of response.

The purpose of this study is to describe information search strategies and use of resources in the school library and other facilities by students who are completing course assignments that require research activities. The school that your son/daughter attends has been chosen for the study because it actively supports instruction in the research process.

Anonymity is assured for all students. The results of this study will be reported in general terms in the school newsletter so you may be informed of the overall findings. Student participation is on a voluntary basis. The study will not affect the grades of the participants or non-participants in any way. Students may choose to withdraw from the study at any time without any penalty.

A school library exists to serve the information needs of its students. This study seeks to describe how students are currently using the resources of the library to meet their needs in order to offer insights for planning and development of more effective and cost efficient school library resources in the future.

For further information about the study, you may contact me (433-0747) or the Co-Supervisors, Dr. Anna Altmann, School of Library and Information Studies (492-4578) and Dr. Dianne Oberg, Department of Elementary Education (492-3669). If no-one is available, please leave a message and your call will be returned as soon as possible.

Yours truly,

Rae Hazelwood, Student
School of Library and Information Studies
University of Alberta

B. Parental Consent and Student Assent Form

CONSENT FORM

PROJECT TITLE: An Investigation of Information Search Strategies and Resource Use by High School Students in a School That Has Adopted the Focus on Research Model

RESEARCHER: Rae Hazelwood
Student, School of Library and Information Studies
University of Alberta

SUPERVISORS: Dr. Anna Altmann
School of Library and Information Studies
Faculty of Education, University of Alberta

Dr. Dianne Oberg
Department of Elementary Education
Faculty of Education, University of Alberta

This is to certify that I give permission for my son/daughter to participate in the university study, the purpose of which is to describe how high school students use the resources in the school library and other facilities in order to gather information to complete course assignments that require research.

I consent to have my son/daughter complete a bibliography and a questionnaire in conjunction with his/her research assignment. The specific information from these bibliographies and questionnaires will be kept confidential and will be compiled in such a way as to ensure anonymity. Results will be reported in general terms in the school newsletter after the responses have been analyzed.

I understand that the study will not affect the grades of participants or non-participants in any way. My son/daughter has the right to withdraw from this university study at any time without any penalty.

_____
(Signature of Parent or Guardian)

_____
Date

****

I, _____ have read the above consent form and understand the purpose and contents of this study. I am willing to participate in this research.

_____
(Signature of Participant)

_____
Date

_____
(Signature of Researcher)

II. Data Collection Instruments

A. Student Questionnaire

Student Questionnaire

Teacher Instructions:

1. Administer the student questionnaires after the student assignments and bibliography sheets have been collected.

2. To preserve anonymity, each student should enter his/her code name at the top of the first page of the questionnaire. (N.B. Each student should use the same code name for all data sheets.)

3. Remind the students to read the instructions carefully.

4. Please collect the completed questionnaires and place them in the envelope provided. Give the envelope to the researcher or leave it in the library with the Teacher-Librarian.

5. Thank you for your assistance.

(Adapted, with permission, from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1986 by Barbara A. Hall.)

Research Assignments and Information Sources

Student Questionnaire

CODE NAME _____

TOPIC _____ **SUBJECT AREA** _____

Explanation:

This questionnaire is designed to help determine where and how you gathered information in the preparation of your research assignment. All replies will be kept confidential.

I. Information Sources

Place an "X" in as many boxes as apply.

1. Did you use any of these libraries in preparing your research assignment, even if you didn't find any information?

   a. ☐ school library

   b. ☐ public library

   c. ☐ college library (e.g., NAIT, AVC, Concordia)

   d. ☐ university library

   e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

   f. ☐ home or personal library of student or some other individual in the community

2. Did anyone from the above libraries help you find information?

   a. ☐ yes

   b. ☐ no

If yes, please specify in which types of libraries you received help.

a. ☐ school library

b. ☐ public library

c. ☐ college library (e.g., NAIT, AVC, Concordia)

d. ☐ university library

e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

f. ☐ home or personal library of student or some other individual in the community

3. Did anyone else, such as a friend and/or family member help you use a library by accompanying you and assisting you there?

a. ☐ yes

b. ☐ no

If yes, please specify in which types of libraries you received this help.

a. ☐ school library

b. ☐ public library

c. ☐ college library (e.g., NAIT, AVC, Concordia)

d. ☐ university library

e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

f. ☐ home or personal library of student or some other individual in the community

4. Many times friends and/or family members are able to gather information from libraries for students. Did someone use any library for you? In other words, did someone search for information for you without you being present?

a. ☐ yes

b. ☐ no

If yes, please specify which types of libraries were used by someone else for you.

a. ☐ school library

b. ☐ public library

c. ☐ college library (e.g., NAIT, AVC, Concordia)

d. ☐ university library

e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

f. ☐ home or personal library of student or some other individual in the community

5. Did your teacher suggest where you could find information in any of the following libraries?

a. ☐ school library

b. ☐ public library

c. ☐ college library (e.g., NAIT, AVC, Concordia)

d. ☐ university library

e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

f. ☐ home or personal library of student or some other individual in the community

6. Did your school librarian suggest where you could find additional information in any of the following libraries?

a. ☐ school library

b. ☐ public library

c. ☐ college library (e.g., NAIT, AVC, Concordia)

d. ☐ university library

e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

f. ☐ home or personal library of student or some other individual in the community

7. Below is a list of non-library sources of information. Did you use any of these sources even if you didn't find any information?

a. ☐ personal interviews to collect information

b. ☐ writing to individuals, organizations, agencies, or associations for available material

c. ☐ personally contacting individuals, organizations, agencies or associations for available material

d. ☐ viewing a television program

e. ☐ consulting a telephone directory

f. ☐ borrowing materials from your teacher

g. ☐ other - Please specify below.

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," and from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1978 by Jacqueline Cooper Mancall and 1986 by Barbara A. Hall.)

II. Research Activities

The research process can be divided into 5 stages - planning, information retrieval, information processing, information sharing, and evaluation. This part of the questionnaire explores the strategies you used to complete your assignment. Please describe briefly the approximate time spent (in hours) and your activities in each of the stages. If any of the stages do not apply to your assignment, write N/A (not applicable) in the appropriate spaces.

Stages	Time	Activities
Planning		
Information Retrieval		
Information Processing		
Information Sharing		
Evaluation		

B. Bibliography Sheets

Bibliography Sheets - Information Access Tools and Information Sources

Teacher Instructions:

1. There are two types of bibliography sheets - **Information Access Tools** and **Information Sources**.

   An **Information Access Tool** is any material that directs the student to information rather than provides the actual information (e.g., Readers' Guide, Science Citation Index, card catalogue). Students should not list people (e.g., teacher-librarian, parent, teacher) as access tools.

   On the **Information Sources** bibliography sheet, students are to list each and every type of material consulted and/or used as a reference in the research and writing of their papers.

2. To preserve anonymity, each student should choose a "Code Name." Each sheet should be marked with the student's "Code Name." This will allow the matching of the bibliography sheets and the questionnaires in the data analysis stage. In addition, please ask the students to note the topic of their research assignment and the course name on the top of each bibliography sheet.

3. Provide each student with the **Student Instruction Page** and as many copies of the two bibliographic forms as they need to list all the resources used in the researching and writing of their papers.

4. Staple together the bibliography pages from each student's assignment and place them in the envelope provided. Please give the envelopes to the researcher or leave them in the library with the Teacher-Librarian.

(Adapted, with permission, from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1986 by Barbara A. Hall.)

Bibliography Sheets - Information Access Tools and Information Sources

Student Instructions:

1. To preserve anonymity, please choose a "Code Name." Each sheet should be marked with your "Code Name." This will allow the matching of the bibliography sheets and the questionnaires in the data analysis stage. In addition, please fill in the topic of your research assignment and the course name on the top of each bibliography sheet.
2. Make sure that you have a copy of the **Student Instruction Page** and as many copies of the **two bibliographic forms** as you need to list all the resources used in the researching and writing of your assignment.
3. There are two types of bibliography sheets - **Information Access Tools** and **Information Sources**.
   An **Information Access Tool** is any material that directs you to information rather than provides the actual information (e.g., Readers' Guide, Science Citation Index, card catalogue). Do not list people (e.g., teacher-librarian, parent, teacher) as access tools.
   On the **Information Sources** bibliography sheet, list each and every type of material consulted and/or used as a reference in the research and writing of your assignment.
4. **Location of Information/Location of Information Access Tool**: Possible choices could include one of the following terms: school library; public library; college/university library; private library (companies, research organizations, government, special groups); home or personal library.
   If you have used material from another source, please explain.
5. **Format of Information Sources:** Possible choices could include one of the following terms:
   Library Resources - book, filmstrip, film, slide, cassette, videotape, pamphlet, magazine, newspaper, realia, game, model, database
   Other Resources - television, radio, cinema, interview, field trip
   If you use a multi-media kit, please indicate the actual pieces of the kit they used in your research.
   If any type of material other than the above is used, please specify.
   Format of Information Access Tools: Indicate whether the material is in print, microfiche, or online.
6. **Subject Headings or Key Words (Information Access Tools):** Indicate the words that you used to locate the information. For example, to find information on "Acid Rain," you might search under "Environment" in the card catalogue.
7. **Information Not Available or Not Applicable (N/A):** Some of the headings will not apply to all **Information Sources** and **Information Access Tools**. For example, if a card catalogue is one of your Information Access Tools, simply fill in **N/A** under Publisher and Publication Date.

(Adapted, with permission, from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1986 by Barbara A. Hall.)

BIBLIOGRAPHY - INFORMATION SOURCES CODE NAME _____

TOPIC _____ SUBJECT AREA _____

Location of Information	Author	Title	Publisher or Producer or Magazine Title	Publi-cation Date	Format of Information

(Adapted, with permission, from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1986 by Barbara A. Hall.)

BIBLIOGRAPHY - INFORMATION ACCESS TOOLS CODE NAME _____

TOPIC _____ SUBJECT AREA _____

Location of Information Access Tool	Title	Publisher or Producer	Publi-cation Date	Format of Information Access Tool	Subject Headings or Key Words Used

C. Teacher Questionnaire

Research Assignments and Information Sources

Teacher Questionnaire

Explanation: This questionnaire deals with those aspects of the research assignment related to library services and resources. All replies will be kept confidential.

I. Topic Selection

A. Read the following statements and place an "X" in the box beside the situation that best describes how a student selected a topic for his/her research assignment.

a. ☐ The student had an unrestricted choice of topic.

b. ☐ The student was assigned a general topic but was given the choice of selecting a particular aspect of the topic.

c. ☐ A list of specific topics was presented from which a student selected one.

d. ☐ A specific topic was assigned to each student.

e. ☐ Other, please specify.

_____

II. Guidance in Location of Information

A. Below is a list of the types of libraries students may turn to in search of information. Use an "X" to indicate the sources that you suggested to students.

a. ☐ school library

b. ☐ public library

c. ☐ college library (e.g., NAIT, AVC, Concordia)

d. ☐ university library

e. ☐ private libraries (i.e., those belonging to companies, government, research organizations or special groups)

f. ☐ home or personal library of student or some other individual in the community

g. ☐ none of the above

B. Below is a list of non-library sources of information. Use an "X" to indicate the sources that you suggested to students.

a. ☐ personal interviews to collect information

b. ☐ writing or contacting individuals, organizations, agencies, or associations for available material

c. ☐ viewing a television program

d. ☐ consulting a telephone directory

f. ☐ borrowing materials from their teachers

g. ☐ other - Please specify below.

_____

g. ☐ none of the above

C. Instruction in library use may be provided in a variety of ways. Below is a list of possibilities. Use an "X" to indicate any of the procedures that you followed.

a. ☐ General classroom instruction in the use of the school library was provided by the teacher.

b. ☐ General instruction in the use of library tools and materials was provided by the teacher-librarian.

c. ☐ The teacher accompanied students to a public library and provided instruction for them there.

d. ☐ The teacher accompanied students to a college or university library and provided instruction for them there.

e. ☐ Other - Please specify below.

_____

f. ☐ None of the above.

III. Interaction with Libraries

A. Describe your own interaction with libraries in relation to your students' research papers by marking all of the following that apply.

1. Interaction with the teacher-librarian

a. ☐ Planned with the teacher-librarian before the assignment was given

b. ☐ Planned with the teacher-librarian after the assignment was given

c. ☐ Responsibility for the planning, teaching, and evaluation of the research assignment shared equally between the teacher and the teacher-librarian in a team-teaching context

d. ☐ Primary responsibility for the planning, teaching and the evaluation of the research assignment assumed by the teacher

e. ☐ Planning, teaching, and evaluation tasks for the research assignment divided equally (or almost equally) between the teacher and teacher-librarian

f. ☐ Teacher responsible for all the instruction and evaluation except for teaching of library skills (by teacher-librarian)

g. ☐ none of the above - Please specify

_____

2. Interaction with libraries outside the school

a. ☐ Discussed the assignment and topics with the public librarian

b. ☐ Discussed the assignment and topics with a college and/or university librarian

c. ☐ Borrowed materials for students from libraries outside the school

d. ☐ Loaned materials from my personal library to students

e. ☐ Other - Please specify

_____

f. ☐ None of the above

IV. Interaction with Organizations Other Than Libraries

List below any contacts made with organizations other than libraries in relation to the students' research papers.

_____

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," and from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1978 by Jacqueline Cooper Mancall and 1986 by Barbara A. Hall.)

D. Teacher Interview

Teacher Interview Schedule

Introduction (To be read to each Interviewee)

In conducting this study, I am trying to describe collection use by students using the research process to complete a curriculum-based research assignment. I am interested in the students' information seeking behaviours and their use of information sources. The questionnaire that you previously completed will provide me with information on the information location and retrieval part of the assignment. The interview should contribute to a description of the research process experienced by your students. Hopefully, the results of my study will give us some insight into the relationship between collection use and the research process, particularly as it relates to the school library.

During the interview, I will be reading you some questions. I would appreciate your honest response to each. Please feel free to make any comments that you wish.

Please be aware that I am tape recording our session but be assured that your answers will remain anonymous.

Should any further questions arise, I will be happy to discuss them with you after the interview.

The Research Process

Question 1: What were the objectives of the research assignment?

probe 1: What curriculum objectives were you addressing?

probe 2: What library skill objectives were you addressing?

probe 3: What information seeking strategy objectives were you addressing?

probe 4: What critical thinking objectives were you addressing?

probe 5: What objectives for transferability and lifelong learning were you addressing?

Question 2: Could you tell me how you planned or developed the research assignment?

probe 1: How did you choose the topic?

probe 2: Did you develop the assignment yourself or is it part of the program of studies?

probe 3: Did you work with other colleagues in the planning of the assignment (teachers, consultants, department members, teacher-librarian)?

probe 4: What was the role of the teacher-librarian in the development and execution of the research assignment? in the planning stage? in the implementation stage? in the evaluation stage?

probe 5: What was the role of the teacher-librarian in relation to instruction in the Focus on Research Model? to curriculum instruction? to instruction in library skills?

Question 3: The research process as described in Focus on Research is divided into 5 stages - planning, information retrieval, information processing, information sharing, and evaluation. Could you please describe your activities and the activities of your students in each of the 5 stages.

probe 1: Planning

Teacher's Activities?
Students' Activities?
Length of Time Spent in this Stage?
Where Activity Occurred?

probe 2: Information Retrieval

Teacher's Activities?
Students' Activities?
Length of Time Spent in this Stage?
Where Activity Occurred?

probe 3: Information Processing

Teacher's Activities?
Students' Activities?
Length of Time Spent in this Stage?
Where Activity Occurred?

probe 4: Information Sharing

Teacher's Activities?
Students' Activities?
Length of Time Spent in this Stage?
Where Activity Occurred?

probe 5: Evaluation

Teacher's Activities?
Students' Activities?
Length of Time Spent in this Stage?
Where Activity Occurred?

Question 4: Please consider the research assignment that your students have just completed. In your opinion, did the assignment meet your objectives? Why or why not?

probe 1: Was it successful in meeting curricular objectives? Library skill objectives? Information seeking strategy objectives? Critical thinking objectives? Transferable skills and lifelong learning strategies?

probe 2: What were the strengths of the assignment?

probe 3: What were the weaknesses of the assignment?

probe 4: In your opinion, how well did the resources of the school library serve the needs of the research assignment?

Question 5: Do you think that you would use this particular research assignment again in another class? Why or why not?

probe 1: What changes would you make in order to make the assignment more effective?

probe 2: What changes in school library resources would make the assignment more effective?

probe 3: What changes would you make in the instruction and implementation of the research process in order to make the assignment more effective?

Question 6: Is there any other aspect of the research assignment that you would like to comment on relative to the relationship between the research process and resource use by students?

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," and from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1978 by Jacqueline Cooper Mancall and 1986 by Barbara A. Hall.)

Dear

I am looking forward to our meeting on _____. I thought it might facilitate the discussion if I sent you a copy of the format I plan to follow. Please be aware that I will be tape-recording our session but be assured that your answers will remain confidential. The following is not a questionnaire. It is a tool to assist you in organizing your thoughts before our meeting.

In conducting this study, I am trying to describe collection use by students using the research process to complete a curriculum-based research assignment. I am interested in the students' information seeking behaviours and their use of information sources. The questionnaire that you previously completed will provide me with information on the information location and retrieval part of the assignment. The interview will contribute to a description of the research process experienced by your students. Hopefully, the results of my study will give us some insight into the relationship between collection use and the research process, particularly as it relates to the school library.

****

The Research Process

Question 1: What were the objectives of the class research assignment?

Question 2: Could you tell me how you planned or developed the class research assignment?

Question 3: The research process as described in Focus on Research is divided into 5 stages - planning, information retrieval, information processing, information sharing, and evaluation. Could you please describe your activities and the activities of your students in each of the 5 stages.

Question 4: Please consider the research assignment that your students have just completed. In your opinion, did the assignment meet your objectives? Why or why not?

Question 5: Do you think that you would use this particular research assignment again in another class? Why or why not?

Question 6: Is there any other aspect of the research assignment that you would like to comment on relative to the relationship between the research process and resource use by students?

****

Thank you for looking this over. I think the interview process will be better and more thorough with you knowing what will be discussed. It will also give you a chance to jot down any comments or points that you would like to bring up in the interview.

See you on _____. I appreciate your input in this study.

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," Copyright 1978 by Jacqueline Cooper Mancall.)

E. Teacher-Librarian Interviews

Teacher-Librarian Interview Schedule - Interview I

Introduction (To be read to the Teacher-Librarian)

In conducting this study, I am trying to describe collection use by students using the research process to complete a curriculum-based research assignment. I am interested in the students' information seeking behaviours and their use of information sources. As you know, I have scheduled a series of three interviews with you. In this first interview I would like to focus on background information about the library, including the collection, and the mission, goals, and objectives. I will be asking you about collection development and selection policy, and about the effects of budget restraints. This interview will help me establish the context for the study of the relationship between collection use and the research process.

During the interview, I will be reading you some questions. I would appreciate your honest response to each. Please feel free to make any comments that you wish.

Please be aware that I am tape recording our session but be assured that your answers will remain anonymous.

Should any further questions arise, I will be happy to discuss them with you after the interview.

Question 1: I would like to begin by asking you to describe the collection and the resources in the school library. I already have recorded many of the details concerning number and types of resources. What I am interested in is a more general description of the collection and your assessment of the collection.

probe 1: How would you describe the Reference Section?

probe 2: How would you describe the Fiction Section?

probe 3: How would you describe the Non-fiction Section?

probe 4: How would you describe the Online and Automated Resources in the library?

probe 5: How would you describe the collection in terms of currency?

probe 6: How would you describe the collection in terms of format diversity and distribution (i.e., percentage of collection devoted to monographs, periodicals, etc. in terms of numbers and in terms of budget dollars)?

probe 7: How would you describe the collection in terms of general access? What are your library hours?
Are the hours of the library the same as those of regularly scheduled classes?
Is the library open for some time before school, at noon hour and after school?
Are library hours ever restricted for any reason?

probe 8: How would you describe the collection in terms of access tools for students and teachers?

probe 9: What is your general over-all assessment/evaluation of the collection?

probe 10: What are the collection's strengths?

probe 11: What are the collection's weaknesses?

probe 12: Have you ever had to say "no" to a proposed assignment because of collection limitations?

Question 2: Does the library have a formal mission statement? If not, does it have an informal (unwritten) mission?

probe 1: How does this relate to the mission of the school? of the school district? of Alberta Education?

probe 2: Has the mission statement of the library changed in the past five years? If yes, what has caused the change? and how has it changed?

Question 3: Please describe the library's goals and objectives for 1992-93.

probe 1: How do the goals and objectives relate to the mission of the library?

probe 2: Who is responsible for developing each year's goals and objectives for the library?

Question 4: Please outline your current collection development policy.

probe 1: How does the collection development policy relate to the goals of the school?

probe 2: In what areas are general materials required? In what areas are in-depth collections of materials required?

probe 3: Does the collection development policy provide for any type of cooperation between school and public libraries? between schools within the district? between schools outside of the district?

probe 4: Has the collection development policy changed over the past five years? In what ways? What has caused the change?

Question 5: Please describe your current selection policy.

probe 1: How does the selection policy relate to the collection development policy?

probe 2: What is the policy on "value vs use" in the acquisition of materials? literary and artistic worth?

probe 3: What is the policy on "balance in the collection?"

probe 4: How are the needs, interests, and abilities of the patrons addressed?

probe 5: Does the selection policy address the issues of collection challenges, gifts, and de-selection?

probe 6: Has the selection policy changed over the past five years? In what ways?

probe 7: Do you consult standardized lists and make use of available review tools? Do you consult with individual subject teachers and departments?

probe 8: To what extent do you support new curriculum?

Question 6: Have budget constraints affected your selection policy? In what ways?

probe 1: Do you place emphasis on the development of an extensive reference collection? Please explain.

probe 2: Do you place emphasis on the development of a core collection? Please explain.

probe 3: Do you restrict your selection to materials that will support the curriculum? In what ways?

probe 4: Have you found it necessary to restrict your periodical collection? Please explain.

probe 5: Has the current situation affected your acquisition of online and automated information sources? Please elaborate.

Question 7: Is there anything other information or comments that you would like to add to complete the description of the collection and its development in this school?

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," and from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1978 by Jacqueline Cooper Mancall and 1986 by Barbara A. Hall.)

Teacher-Librarian Interview Schedule - Interview II

Introduction (To be read to the Teacher-Librarian)

In this second interview, I would like to focus on the role of the Teacher-Librarian in the school library in general and in the research process in particular.

During the interview, I will be reading you some questions. I would appreciate your honest response to each. Please feel free to make any comments that you wish.

Please be aware that I am tape recording our session but be assured that your answers will remain anonymous.

Should any further questions arise, I will be happy to discuss them with you after the interview.

Question 1: The duties of a Teacher-Librarian usually include the following aspects: administration/management, reference work, technical or clerical duties, teaching/instruction, professional activities, and cooperative program planning. Would you please describe your work in each of the following areas:

A. Administration/Management
(those activities which ensure the effective running of the physical plant)

probe 1: Approximately what percentage of your time is spent in this area?

B. Reference Work
(those activities whose end product is information for its own sake - quick response items)

probe 1: Approximately what percentage of your time is spent in this area?

C. Technical or Clerical Duties
(those activities of a non-professional or secretarial nature)

probe 1: Approximately what percentage of your time is spent in this area?

D. Teaching/Instruction

a. Non-library related teaching

b. Teaching of what is directly library related

c. Non-directive teaching (e.g., casual discussion and student guidance)

probe 1: Approximately what percentage of teaching time is spent in each of these areas?

probe 2: What percentage of your total time is spent in instruction and teaching?

E. Professional Activities
(activities which keep the Teacher-Librarian current in both the educational field and the field of school librarianship)

probe 1: Approximately what percentage of your time is spent in this area?

F. Cooperative Program Planning
(those activities which draw on the unique expertise of the Teacher-Librarian in bringing students and resources together in the research and learning processes)

probe 1: Approximately what percentage of your time is spent in this area?

Question 2: Please describe the research process as it is being implemented and taught in this school.

probe 1: What are the goals of student research in terms of target concepts, skills, and attitudes?

probe 2: What are the stages in the process?

probe 3: How is the Research Skills Continuum and the Research Level Continuum as described in Focus on Research implemented in this school?

probe 4: In your opinion, what are the significant differences between the Focus on Research Model and other more traditional strategies for information seeking (i.e., source and pathfinder strategies)?

Question 3: Please describe the relationship between cooperative planning and teaching (CPT) and instruction in the research process in this school.

Question 4: Now I wish to focus on the planning and teaching of curriculum-based student research assignments. I am interested in your role as the Teacher-Librarian in student research assignments. I realize that your role will vary from subject to subject and class to class. In order to incorporate the range of variation, I would like you to choose two examples from your general experience in the past year:

- a best case scenario, an example in which you feel you were most effective as a teacher-librarian, and
- a worst case scenario, an example in which you feel you were least effective (most limited) as a teacher-librarian.

Keeping these two case scenarios in mind, please describe your role as Teacher-Librarian in student research assignments.

probe 1: What is your role as the Teacher-Librarian in the planning stage?

probe 2: What is your role in the teaching and instruction stage? In the teaching of traditional library skills? In the teaching of the research process (as defined by Focus on Research)? In the teaching of information literacy skills?

probe 3: What is your role in the evaluation and assessment stage? In the assessment of the research process? In the assessment of the final product?

Question 5: Do you have any additional information or comments that you would like to add relating to the role of the Teacher-Librarian in the school or in the research process?

probe 1: How has the role of the Teacher-Librarian changed in the years that you have been teaching?

probe 2: How would you describe the ideal role of a Teacher-Librarian?

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," and from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1978 by Jacqueline Cooper Mancall and 1986 by Barbara A. Hall.)

Teacher-Librarian Interview Schedule - Interview III

Introduction (To be read to the Teacher-Librarian)

In this third interview, I would like to have you review the six completed research assignments, the research process, and the role of the school library and the Teacher-Librarian in the six research assignments. In other words, in this interview I will be asking you to assess how closely the theory that we have explored in earlier interviews matches the reality of the six student assignments.

During the interview, I will be reading you some questions. I would appreciate your honest response to each. Please feel free to make any comments that you wish.

Please be aware that I am tape recording our session but be assured that your answers will remain anonymous. Should any further questions arise, I will be happy to discuss them with you after the interview.

Question 1: Please describe the role that you as the Teacher-Librarian played in the development and execution of the six research assignments.

probe 1: What was the role of the teacher-librarian in the planning stages? in the implementation stages? in the evaluation stages?

probe 2: What was the role of the teacher-librarian in relation to instruction in the Focus on Research Model? to curriculum content instruction? to instruction in traditional library skills (information location skills)?

Question 2: Please describe the role that the resources of the school library played in the completion of the research assignments.

probe 1: What was the role of the school library in relation to instruction in the Focus on Research Model? to curriculum information sources? to the practice of library skills?

probe 2: Did you, the students, or the teachers need to consult alternate information sources to meet information needs of the research assignments? If so, did this cause any problems? Please explain.

Question 3: Do you think that you would use these particular research assignments again with other classes? Why or why not?

probe 1: What changes would you make in order to make the assignments more effective?

probe 2: What changes in school library resources would make the assignments more effective?

probe 3: What changes would you make in the instruction and implementation of the research process in order to make the assignments more effective?

Question 4: In your opinion, what were the most successful aspects of these research assignments? Why?
What were some of the less successful aspects of these research assignments? Why?

Question 5: In your opinion, how successfully did the school library resources meet the needs of the research assignments?

probe 1: What were the strengths of the collection in relation to the six research assignments? What were the weaknesses?

probe 2: What changes, if any, in the collection and in collection development would make the school library more successful in serving the needs of the students and teachers?

Question 6: Are there any other aspects of the research assignments that you would like to comment on relative to the teacher-librarian's role, the research process, and/or the relationship between the research process and resource use by students?

probe 1: How successfully were the needs and objectives of the students met?

probe 2: How successfully were the needs and objectives of the teachers met?

probe 3: How successfully were your needs and objectives met?

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," and from Barbara A. Hall, "Patterns of Grade Ten Student Information Seeking Behaviour," Copyright 1978 by Jacqueline Cooper Mancall and 1986 by Barbara A. Hall.)

Dear

I am looking forward to our meeting on _____. I thought it might facilitate the discussion if I sent you a copy of the format I plan to follow. Please be aware that I will be tape-recording our session but be assured that your answers will remain confidential. The following is not a questionnaire. It is a tool to assist you in organizing your thoughts before our meeting.

In conducting this study, I am trying to describe collection use by students using the research process to complete a curriculum-based research assignment. I am interested in the students' information seeking behaviours and their use of information sources. In the first interview I would like to focus on background information about the library, including the collection, and the mission, goals, and objectives. I will be asking you about collection development and selection policy, and about the effects of budget restraints. This interview will help me establish the context for the study of the relationship between collection use and the research process.

****

Question 1: I would like to begin by asking you to describe the collection and the resources in the school library. I already have recorded many of the details concerning number and types of resources. What I am interested in is a more general description of the collection and your assessment of the collection.

Question 2: Does the library have a formal mission statement? If not, does it have an informal (unwritten) mission? Please discuss the mission of the library.

Question 3: Please describe the library's goals and objectives for 1992-93.

Question 4: Please outline your current collection development policy.

Question 5: Please describe your current selection policy.

Question 6: Have budget constraints affected your selection policy? In what ways?

Question 7: Is there anything other information or comments that you would like to add to complete the description of the collection and its development in this school?

****

Thank you for looking this over. I think the interview process will be better and more thorough with you knowing what will be discussed. It will also give you a chance to jot down any comments or points that you would like to bring up in the interview.

See you on _____. I appreciate your input in this study.

Yours truly,

Rae Hazelwood

(Adapted, with permission, from Dr. Jacqueline Mancall, "Resources Used by High School Students in Preparing Study Projects: A Bibliometric Approach," Copyright 1978 by Jacqueline Cooper Mancall.)

APPENDIX B

THE SCHOOL LIBRARY COLLECTION

1. The basic collection should support the major content areas of the instructional program and represent a balanced range of student interests and needs, including the appreciation of literature.

2. The size of the basic collection should be dependent upon the total student enrolment served, the number of grades taught in the school, the number and types of instructional programs, and accessibility of relevant materials through regional cooperation, networking and interlibrary loan arrangements.

3. The basic library collection for a school of 250 students should include:

print and non-print materials	...	4000 titles
magazines	...	20
newspapers	...	2
pamphlets, pictures	...	to meet program needs
film/video, etc.	...	from Regional Film Centre, District IMC, ACCESS, etc.

Note:

1. The above represents an average basic collection for 250 students regardless of the type of school (elementary, junior or senior high). The high number of course offerings in junior and senior high is offset by more grade levels served in elementary school and the need for more books at the primary school level.

2. For schools with larger enrolments, the collection should be increased to meet the needs of the students and the instructional program.

3. The ratio of [illegible] to nonfiction and reference should range from 15% - 30% [illegible] 70% - 85% nonfiction and reference depending upon accessibility and the nature of interlibrary loans available from [illegible]ool, regional, public, college and university libraries.

4. The reference collection should include at least one current set of encyclopedia.

5. Schools offering programs in both English and languages other than English, should increase the basic collection to include a comparable standard of materials (print and non-print) to support instruction in the language(s) offered.

6. Selection criteria for the library collection should be consistent with:
   (a) Guidelines for Tolerance and Understanding.
   (b) Controversial Issues Policy statement.
   (c) Canadian content priorities.
   (d) Identified library program goals and objectives.
   (e) Needs identified by students and teachers.
   (f) Information from recognized selection tools.

7. An annual school library budget should be allocated for the purchase of new materials, supplies and equipment (if equipment is not provided for in the capital budget or some other budget category). The budget should be determined on the basis of the funds required to realize library program goals and objectives. It should be recognized that smaller schools and schools offering programs in English as well as languages other than English will require a higher than average allocation.

(Policy, Guidelines, Procedures and Standards for School Libraries in Alberta 1984, 2-3)

APPENDIX C

STUDENT ASSIGNMENTS

I. Assignment 1 (Teacher R) - English 13

Encounters with Nature

Oral Report - (brief) min. 3 minutes
Written Report - 3 or more pages

Choose A or B:

A. Research an animal - (could be exotic or extinct)

1. physical characteristics
2. environment/"home"
3. habits - feeding, etc.
4. other interesting behaviour or facts

B. Research an area of science - e.g., tornadoes, killer bees, black holes, heart transplants

1. background and essential facts, definitions
2. some interesting aspects of topic - focus on 1 or 2 in detail
3. tell what you learned about topic, what you want to know more about, personal response stuff

Some possible topics are given here:

tornado research, acid rain, life inside the womb, interplanetary travel, strobe light photography, shark habits, origins of human life, dinosaurs and the comet theory, studies of autism, behavioural psychology, communication with apes, volcanoes, earthquake prediction, greenhouse effect, DNA research, robots, left/right brain studies, bionics, dietetics, computer applications, artificial organs, astronomy, killer bees, conservation, crowd behaviour, Big Bang theory, laser technology, memory research, reptile studies, telecommunications systems, atom studies, plastic surgery, cancer or AIDS research, primitive societies today, language learning, sea farming, black holes, personality testing

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

II. Assignment 2 (Teacher S) - English 10

ASSIGNMENT: The novel To Kill a Mockingbird tells a tale where the townspeople are caught in a web of values, southern tradition and the challenge to human rights. A black man is accused of molesting a white girl. To help the class understand some of the background of the novel, each student is to choose a topic related to either the Civil Rights Movement in the United States or elsewhere. They may, if they wish, choose literature that discusses racial problems and prepare a product related to that literature. Then they must plan, research and produce one or more products and present these to the class, explaining why they chose their topic. A very important part of this assignment is the planning stage and each student is required to confer with the teacher, or the teacher-librarian to make sure that they are on the right track.

TIME FRAME: Planning, information location, and information processing will take place in the Library, May 17-25, 1993. (Information Sharing) The product will be evaluated by the teacher and the teacher-librarian, using each individual plan as a basis for the evaluation. Each student will do a self-evaluation and the entire class will be involved in peer evaluations. The forms for self-evaluation and peer evaluation will be included with this handout. The deadline for the completion of this is June 4, 1993.

OBJECTIVES:
1. To plan for research.
2. To practice reading, writing, notetaking, organizing and presenting skills.
3. To introduce students to the background of the novel.
4. To give students the opportunity to do a self evaluation and a peer evaluation.

SUGGESTIONS FOR TOPICS:

1. The novel is set in the Southern States. Find out about the flora of the American South (azaleas, cannas, camellias, oak and magnolia trees).
2. The Depression of the Thirties in the U.S.A.
3. Any aspect of the Civil Rights Movement (This topic has to be narrowed.)
4. Segregation in the U.S.
5. Martin Luther King
6. Malcolm X
7. Brown vs. Board of Education
8. Ku Klux Klan during the Depression
9. Franklin D. Roosevelt's New Deal

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

10. Stephen Bilko, South Africa
11. Desmond Tutu
12. Amnesty International
13. How did the Civil War affect Negroes?
14. Who was Herbert Hoover?
15. What did Eleanor Roosevelt attempt to do for civil rights?
16. Mohandas K. Gandi
17. Marion Anderson - first Black Opera singer
18. Jackie Robinson - first Black professional baseball player
19. Nelson Mandella
20. Harriot Tubman
21. Langston Hughes' Poetry
22. Voting Rights for Negroes
23. Jim Crow Justice
24. The Black Ghetto

PRODUCT IDEAS:

Design a crossword puzzle
Make a lithograph
Write a short story
Write a computer program
Design needlework
Construct a photogram
Make a game
Make an etching
Create a word-play game
Create a radio program
Create an advertisement
Make a collection
Create a puppet show
Write a "Letter to the Editor"
Make a comic book
Design and make costumes
Create a collage
Make a mural
Prepare and do a survey
Formulate a scientific theory
Write and tape a conversation
Design an experiment
Create a musical instrument
Make a clay sculpture
Create a painting
Draw a chart
Hold a debate
Create a slogan
Create a bulletin board
Create a slide show
Teach a lesson to another class
Make a startling discovery
Write a new law
Make transparencies
Write a book
Plan a newspaper
Write a poem
Create a filmstrip
Make a mobile
Make a simulation game
Make a photograph album
Write and produce a play
Create a film
Create a model
Design a plaster of paris model
Make a travel brochure
Make an ammonia imprint
Design an animated movie
Prepare a TV program
Make a diorama
Hold a press conference
Create a paper mache object
Draw a map
Tape an interview
Make a riddle
Circulate a petition

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

STUDENT RESEARCH PLAN
STAGE 1: PLANNING

Name: _____ Subject: _____ Grade: _____

Theme: _____

Establish Topic

Topic Statement: _____

Subtopics: _____

Subject Headings: _____

Identify Information Sources

Resources: _____

Identify Audience and Presentation Format

Presentation Format and Needs: _____

Audience: _____

Establish Evaluation Criteria

Guidelines: _____

Evaluation: _____

Timeline: _____

Checked and Approved: _____

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

RESEARCH ACTIVITY UNIT PLAN

SUBJECT/UNIT: _____

THEME: _____

TIMELINE: _____

GRADE: _____

Stages	Time	Strategies	Resources
Stage 1: Planning A. Establish Topic B. Identify Information Sources C. Identify Audience and Presentation Format D. Establish Evaluation Criteria E. Review Process			
Stage 2: Information Retrieval A. Locate Resources B. Collect Resources C. Review Process			

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

Stages	Time	Strategies	Resources
Stage 3: Information Processing A. Choose Relevant Information B. Evaluate Information C. Organize and Record Information D. Make Connections and Inferences E. Create Product F. Revise and Edit G. Review Process			
Stage 4: Information Sharing A. Present Findings B. Demonstrate Appropriate Audience Behaviour C. Review Process			
Stage 5: Evaluation A. Evaluate Product B. Evaluate Research Procedures and Skills C. Review Process			

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

PEER EVALUATION: ORAL PRESENTATIONS/SPEECHES

	Very Good 3	Satisfactory 2	Poor 1
1. Gave an interesting introduction			
2. Presented clear explanation of topic			
3. Presented information in acceptable order			
4. Used complete sentences			
5. Offered a concluding summary			
6. Spoke clearly, correctly, distinctly and confidently			
7. Maintained eye contact			
8. Maintained acceptable posture			
9. Maintained the interest of the class			
10. Used visual/audio aids well			
11. Handled questions and comments from the class very well			
		Total /33	

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

STUDENT SELF-EVALUATION

		Very Easily	Easily	With Difficulty
	1. Using My Planning Skills			
1.	I understood the topic.	☐	☐	☐
2.	I made up research questions.	☐	☐	☐
3.	I suggested possible information sources.	☐	☐	☐
4.	I chose my questions.	☐	☐	☐
5.	I developed a research plan.	☐	☐	☐
	2. Using My Information Retrieval Skills			
1.	I identified sources of information.			
	• in the school	☐	☐	☐
	• in the community	☐	☐	☐
	3. Using My Information Processing Skills			
1.	I gathered and organized my information.	☐	☐	☐
2.	I discovered information I did not know.	☐	☐	☐
3.	I answered the questions.	☐	☐	☐
4.	I edited my work.	☐	☐	☐
	4. Using My Information Sharing Skills			
1.	I presented my research.	☐	☐	☐
	5. Using My Evaluation Skills			
1.	I carried out my action plan.	☐	☐	☐

2. I learned the following skills which can be used in other activities:

_____

_____

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

III. Assignment 3 (Teacher T) - English 10 AC (Academic Challenge)

Christianity and Medieval Epics

ASSIGNMENT: Each student is assigned one topic related to Christianity and, at the same time, assigned to work in a group on one of the medieval epics. For the individual section students are to write a brief sketch of the characters/events and find three paintings related to their topic. Using these paintings, the students are to point out the similarities/differences between the paintings. The group will retell their epic in ballad form. The remainder of the planning is to be completed by the group. The presentation must include: key elements of the story, an analysis of the main characters, an overview of the themes, a discussion of the kind of society that created the values (influence of Christianity, etc.), the lifestyle of the period, a discussion of the epic as literature (quest, etc.), a discussion of the values held by the hero, and a discussion of what makes a hero.

TOPICS:

1.	Creation	A
2.	Adam and Eve (Expulsion)	B
3.	Cain and Abel	C
4.	Noah	D
5.	Isaac	E
6.	Moses	F
7.	Joseph	A
8.	Sampson	B
9.	David	C
10.	Samuel	D
11.	Deborah	E
12.	Ruth	F
13.	Daniel	A
14.	Joshua	B
15.	Esther	C
16.	Jonah	D
17.	Job	E
18.	Nativity	F
19.	John the Baptist	A
20.	Lazarus	B
21.	Christ vs. the Moneylenders	C
22.	Last Supper	D
23.	Temptation	E
24.	Crucifixion	F

A. Chanson de Roland
B. Morte d'Arthur
C. El Cid

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

D. Niebelingenlied
E. Tristan and Isolde (Gottfried von Strassburg)
F. Parzival - Groal (Wolfram von Eschenbach)

OBJECTIVES:

1. To understand the importance of Christianity as a unifying influence on Medieval Literature.
2. To read and enjoy Medieval epics.
3. To practice listening, writing, reading, and research skills.
4. To practice a variety of evaluation techniques - self, group, peers.

PROCEDURE:

The teacher assigns a specific topic to each student and by doing so sets up groups to work on each epic. All research is completed in approximately 3 blocks of library time (240 minutes). Bibles are provided and students are directed to the Biblical concordances and other references.

To make sure that the material that the students need is available, a bibliography is provided.

BIBLIOGRAPHY:

1. Arthur the King. New York: Sterling Publishing Co., 1991.

2. Cretien de Trois. Arthurian Romances. New York: Penguin Books, 1991.

3. Dunan, Marcel (ed.). Larousse Encyclopedia of Ancient and Medieval History. London: Paul Hamlyn Ltd., 1965.

4. Durrant, Will. The Age of Faith. New York: Simon & Schuster, 1950.

5. Durrant, Will. Caesar and Christ. New York: Simon & Schuster, 1944.

6. French Legends, Tales and Fairy Stories. Retold by Barbara Leonie Picard. Toronto: Oxford University Press, 1992.

7. Heller, Julek. Knights. New York: Schocken Books, 1982.

8. Janson, H.W. History of Art. New York: Prentice Hall, 1978.

9. Jung, Emma & von Franz, Marie-Louise. The Grail Legend. Boston: Sigo Press, 1986.

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

10. King Arthur. Stories from Sir Thomas Malory's Morte d'Arthur. Retold by Mary MacLeod. New York: Dodd, Mead, & Co., 1953.

11. King Arthur's Death. Trans. by Brian Stone. New York: Penguin Books, 1988.

12. Magill, Frank N. (ed.). Masterplots. New York: Salem Press, 1971.

13. Malory's Le Morte d'Arthur. A New Rendition by Keith Baines. London: New American Library, 1962.

14. Nutt, Alfred. Studies on the Legend of the Holy Grail. New York: Cooper Square Publishers, 1965.

15. Shahan, Thomas J. (ed.). Famous Myths and Legends. New York: Derrydale Books, 1991.

16. Strade, George. (ed.). European Writers, the Middle Ages and the Renaissance. vol. 1. New York: Scribner & Sons, 1983.

17. Strayer, Joseph. (ed.). Dictionary of the Middle Ages. 13 vol. New York: Scribner & Sons, 1982.

18. Sutcliff, Rosemary. Dragon Slayer. London: Puffin Books, 1962.

19. Heller, Julek. Knight. New York: Schoken Books, 1982.

20. The Sword and the Grail. Retold by Constance Hieatt. New York: Crowell, 1972.

21. von Eschenback, Wolfram. Parcival. London: Penguin Books, 1988.

22. Wagner, Richard. The Ring of Nibelung. New York: Dutton & Co., 1960.

This is not a complete bibliography but simply a list to help you get started. Remember you can use other libraries as well.

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

IV. Assignment 4 (Teacher W) - Social Studies 20

Global Development

ASSIGNMENT:

In pairs, you are to choose a country from the following list to research. The purpose of the research is to find out what are that country's prospects for the future. Your research will be presented in the form of an essay with a maximum of six pages (excluding the bibliography and title page). The class presentation should take a maximum of ten minutes and include a summary of your conclusions. Plan to use some visual aids (charts, graphs, maps, pictures, etc.)

CHOICES:

Iran, Kenya, Argentina, Chile, North Korea, Nigeria, Mexico, Cuba, Philippines, Zaire, Saudi Arabia, Zimbabwe

TIME FRAME:

April 26 - May 14, 1993

Total time in the library: 3 to 4 blocks (Apr. 26 - May 6, 1993)

Class Presentation: May 10 - May 14. Lots will be drawn to determine the order that the presentations will be given. Papers are due on the date of presentation.

OBJECTIVES:

Through research from a number of sources you will:

1) Identify the goals of development in the country selected.
2) Identify examples of successful and unsuccessful strategies used in that country to reach its goals.
3) Identify factors that caused the success or failure of these strategies.
4) Know how to collect information using notes, webs, retrieval chart, etc.
5) Know how to keep track of the sources used (bibliography).
6) Present an oral report to the class using visual materials such as graphs, charts, maps, etc. to help effectively communicate your information.
7) Practice working cooperatively with another person to plan research and share the work.

PROCEDURE:

Stage One: Planning

Discuss with your partner how you will approach the work to be done. Also discuss where you might look for information on the country you have selected. Discuss how you will evaluate your sources. Are you looking for up-to-date information? How can you determine if it is correct? How many sources should you use?

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

Stage Two: Information Retrieval

Please use the bibliographic sheets provided to keep a record of the resources that you have located. Remember that the School Library is one of the places that you will find resources. You can use information from other libraries, experts, textbooks, etc.

Stage Three: Information Processing

Use the following questions to guide your research:

1) What is the past and present degree of development in the country you have selected? How have factors such as traditional society, imperialism and independence affected its current situation?
2) What prospects does it have for future development? What "paths of development" seem most likely? What choices and alternatives are being considered? What are the potential strengths? What problems are likely to get in the way?
3) What are the goals of development?
4) What approaches, strategies, methods are being used to reach these goals?
5) What approaches seem to be most successful?
6) What approaches seem to be most unsuccessful?

As you research, use a system to organize your notes. Have [name of teacher] or [name of teacher-librarian] check your notes to make sure that you are on the right track. N.B.: Support your conclusions with specific, up-to-date information from your research whenever possible.

Stage 4: Information Sharing

Meet with your team members to plan your presentation. First decide what information and examples your group will present. then prepare an outline of your presentation. Discuss how you could use some visual materials to present information more effectively than with words alone. Everyone in the group must play a part in the presentation. Rehearse your presentation so that you are well prepared and comfortable with it.

Stage 5: Evaluation

The ways that this assignment will be marked are as follows:

A. Oral Presentation Evaluation
B. Group Effectiveness Appraisal
C. Peer Evaluation of Oral Presentation
D. Self-Evaluation
E. Essay Evaluation

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

A. Evaluation: Oral Presentations/Speeches

		Very Good 3	Satisfactory 2	Poor 1
1.	Gave an interesting introduction			
2.	Presented clear explanation of topic			
3.	Presented information in acceptable order			
4.	Used complete sentences			
5.	Offered a concluding summary			
6.	Spoke clearly, correctly, distinctly, and confidently			
7.	Maintained eye contact			
8.	Maintained acceptable posture			
9.	Maintained the interest of the class			
10.	Used visual/audio aids well			
11.	Handled questions and comments from the class very well			
			Total	/33

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

B. GROUP EFFECTIVENESS APPRAISAL

Name: _____ Group: _____

Project Title: _____

Audience: _____

Rate your group on a 1 to 5 basis (1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent):

1. We worked cooperatively with all group members. 1 2 3 4 5
2. We accomplished what we set out to complete. 1 2 3 4 5
3. We were satisfied with our performance of this group task. 1 2 3 4 5
4. We used our group time efficiently without wasting or misusing time. 1 2 3 4 5
5. We all contributed fairly in the completion of this group task. 1 2 3 4 5

Personal assessment and observations:

1. Did you feel satisfied with your own participation in the project? Discuss your feelings honestly.

_____

_____

2. Do you think that the project participation was fairly equal (that is, do you feel others in your group worked well and contributed fairly)?

_____

3. Do you think there are some ways your group could have improved and therefore produced a better finished project?

_____

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

4. Did you like doing a project like this, or do you honestly prefer to work on your own? (Please answer explaining why or why not.)

_____

5. Please add any helpful comments you may think of:

_____

(from The Writing Process Using the Word Processor, Inservice Leader's Reference Manual c1988, Alberta Education, p 2-70, 2-71)

C. Peer Evaluation: Oral Presentations/Speeches

		Very Good 3	Satisfactory 2	Poor 1
1.	Gave an interesting introduction			
2.	Presented clear explanation of topic			
3.	Presented information in acceptable order			
4.	Used complete sentences			
5.	Offered a concluding summary			
6.	Spoke clearly, correctly, distinctly, and confidently			
7.	Maintained eye contact			
8.	Maintained acceptable posture			
9.	Maintained the interest of the class			
10.	Used visual/audio aids well			
11.	Handled questions and comments from the class very well			
			Total	/33

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

D. Student Self-Evaluation

	Very Easily	Easily	With Difficulty
1: Using My Planning Skills			
1. I understood the topic.	☐	☐	☐
2. I made up research questions.	☐	☐	☐
3. I suggested possible information sources.	☐	☐	☐
4. I chose my questions.	☐	☐	☐
5. I developed a research plan.	☐	☐	☐
2: Using My Information Retrieval Skills			
1. I identified sources of information.			
- in the school	☐	☐	☐
- in the community	☐	☐	☐
3: Using My Information Processing Skills			
1. I gathered and organized my information.	☐	☐	☐
2. I discovered information I did not know.	☐	☐	☐
3. I answered the questions.	☐	☐	☐
4. I edited my work.	☐	☐	☐

E. Evaluation of Written Essay

Research of Subject Matter (accuracy and thoroughness)	10, 9, 8, 7, 6, 5, 4, 3, 2, 1
Organization	5, 4, 3, 2, 1
Conclusions (well-supported)	5, 4, 3, 2, 1
Expression (clear and easily understood)	5, 4, 3, 2, 1
TOTAL	/25 x 4 = ____%

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

V. Assignment 5 (Teacher X) - Social Studies 20

Requirements: Portfolio		Mark
Students are to choose and complete one option in each section.		
Section 1	Essay Newspaper Report Short Story Magazine Article	50
Section 2	Cartoon Photograph Collage Video Tape	30
Section 3	Map Graph Chart Histogram	20
Section 4	Survey Letter to Editor Letter to Member of Parliament Tape on Interview	20
	TOTAL	**120**

Social Studies 20 Topics

1. Global Warming
2. Ozone Depletion
3. Deforestation
4. Nuclear Waste
5. Toxic Waste
6. Overpopulation
7. Arms Sales
8. Third World Poverty
9. Women's Issues
10. Technology
11. Starvation/Hunger
12. Transnationals
13. Third World Debt
14. International Trade
15. Children's Rights
16. Native Rights
17. Human Rights
18. Third World Economic Development
19. First World Poverty
20. Rainforests
21. Aid to the Third World
22. Economic Imperialism
23. Endangered Animals
24. Oceans (Whaling)
25. Air Pollution
26. Genetic Manipulation
27. Disease
28. Nuclear Disarmament

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

VI. Assignment 6 (Teacher Y) - Biology 20

BIOLOGY 20 ECOLOGY PROJECT

OBJECTIVES:

1. To develop an understanding of the interrelationships of ecology/biology, technology and society.
2. To practice the skills associated with research and inquiry.
3. To prepare students to make responsible decisions regarding science related social issues.
4. To learn to look at an issue from more than one perspective.
5. To practice working cooperatively in a group.
6. To start using a personal response journal in biology.

ASSIGNMENT:

1. You will be assigned to a group of four to six students. This group will spend 2 to 3 classes in the library researching a topic of current ecological concern. This topic will be assigned to your group. We will call this group - the RESEARCH GROUP. Your research group will prepare an interesting, informative presentation on the assigned topic for the rest of the class.

2. Your research group will also develop a narrower focus arising out of your research. This focus could be a real or imaginary situation (scenario). You will outline this situation and identify a specific problem for a new grouping of students to investigate.

3. After your presentation, you will play the role of 'scientist' in another group. This other group is actually another RESEARCH GROUPING but now it will be called - a FOCUS GROUP. The other students in the FOCUS GROUP will be assigned roles to play. Together, with your guidance and input, the FOCUS GROUP will attempt to solve, resolve or develop an action plan for the problem your RESEARCH GROUP proposed. You will summarize the result and present the decision to your research group when time is made available to you.

4. You will be keeping a journal from day 1 of this project. There is an attached sheet to help you with this one.

5. You will also be playing various roles as other RESEARCH GROUPS give their presentations and ask their FOCUS QUESTION.

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

EVALUATION: You will be evaluated in a number of ways:

1. **RESEARCH GROUP PRESENTATION** - will be evaluated by each of the other RESEARCH GROUPS, your teacher and the teacher-librarian. You will provide a personal evaluation of your RESEARCH GROUP. (40%)

2. You will also be assessed by the FOCUS GROUP you join as a **scientist**. (20%)

3. Your **PERSONAL JOURNAL** will also be evaluated by your teacher and the teacher-librarian. (30%)

4. Your RESEARCH GROUP'S final summary will be marked by your teacher. (10%)

PERSONAL JOURNAL

You must keep a journal throughout this project. It will be assigned a mark by your teacher and by the teacher-librarian.

GUIDELINES:

1. Include a **TITLE PAGE** with - your name, **RESEARCH GROUP** name, the **dates** the journal covers.

2. **Date** all entries.

3. The journal is the place where you record the questions asked to direct your research, your ideas for inclusion or exclusion of information, the bibliography information as you collect it, other student's ideas and your thoughts while carrying out your research, presentation, group work, etc.

4. This is a **PERSONAL** journal, not necessarily to be shared with other group members or students except for clarification of shared information or ideas. This is not a personal diary where you record things you don't want your teacher to know!!!

5. Include any ideas that come to you regarding improvements to this project or things you like about the project.

6. Include the proper evaluations - **GROUP EFFECTIVENESS APPRAISAL, FOCUS GROUP RESPONSE, STUDENT SELF-EVALUATION**.

7. Include **summaries** of your activities and roles played in **FOCUS GROUPS**.

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

EVALUATION: ORAL PRESENTATION

ECOLOGICAL CONCERN: _____

STUDENT PRESENTERS: _____ _____

EVALUATOR: Teacher/Teacher-Librarian/Research Group A B C D E
(CIRCLE)

		Very Good 3		Satisfactory 2		Poor 1	
1.	All group members present.						
2.	Each member contributed.						
3.	Group was prepared, appeared eager to begin, didn't waste time.						
4.	Introduction was interesting.						
5.	Presented clear explanation of topic.						
6.	Presented information in acceptable order.						
7.	Spoke in complete sentences.						
8.	Offered a concluding summary.						
9.	Spoke clearly, correctly, distinctly and confidently.						
10.	Maintained eye contact with audience.						
11.	Maintained acceptable posture.						
12.	Maintained the interest of the class.						
13.	Used visual/audio aids appropriately.						
14.	Handled questions and comments well.						
15.	Final focus was clearly outlined.						
16.	Final focus is realistic.						
17.	Over-all - your impression of effort, organization, interest.	10	8	6	4	2	0

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

Each member of Evaluation Team signs below:

The total mark of _____, assigned on the preceding page, to GROUP _____ by GROUP _____ is the consensus on the group and as free of personal bias as possible.

_____ _____

_____ _____

_____ _____

EVALUATION OF THE SCIENTIST BY THE FOCUS GROUP

SCIENTIST'S NAME: _____

SCIENTIST'S RESEARCH GROUP: _____

FOCUS GROUP: _____

	Very Good 3	Satisfactory 2		Poor 1
1. Scientist was knowledgeable				
2. Scientist contributed to answering the question				
3. Scientist stayed on task				
4. Over-all impression	5	3	2	0

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

FOCUS GROUP RESPONSE

To be completed by the "scientist" and placed in his/her personal journal.

ECOLOGICAL CONCERN: _____

DATE PRESENTED: _____

SCIENTIST'S NAME: _____

PARAMETERS: Description of location, scenario, etc. _____

_____

FOCUS QUESTION: _____

_____

Description of Roles and Stance taken by each Role: _____

_____

ANSWER TO THE QUESTION: _____

_____

_____

SCIENTIST'S PERSONAL RESPONSE: Does the group's "answer" seem logical? Was it based on science, ethics, economics, politics or some other special interest? A combination of several? Was this focus question easy to answer? Is the group's response a good one? Use the space below to answer these questions. Elaborate on any aspect you wish to help clarify an answer. Feel free to comment on areas of difficulty.

_____

_____

_____

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

STUDENT SELF-EVALUATION

	Very Easily	Easily	With Difficulty
1. Using My Planning Skills			
a. I understood the assignment.	☐	☐	☐
b. I made up research questions.	☐	☐	☐
c. I suggested information sources.	☐	☐	☐
d. I helped select the questions.	☐	☐	☐
e. I developed a research plan.	☐	☐	☐
2. Using My Information Retrieval Skills			
a. I found sources of information.	☐	☐	☐
b. I found varied sources of information e.g., magazines, journals, video, etc.	☐	☐	☐
3. Using My Information Processing Skills			
a. I gathered and organized my information.	☐	☐	☐
b. I discovered information I did not know.	☐	☐	☐
c. I answered all my questions.	☐	☐	☐
d. I edited my work.	☐	☐	☐
4. Using My Information Sharing Skills			
a. I shared my information with my group.	☐	☐	☐
b. I helped organize the group information.	☐	☐	☐
c. I took an equal role in our group presentation.	☐	☐	☐
5. Using My Evaluation Skills			
a. I was honest in my evaluation of my group, the other presentations, and of other students.	☐	☐	☐
b. I made an attempt to evaluate my own learning and participation.	☐	☐	☐

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.

GROUP EFFECTIVENESS APPRAISAL

Research Group:_____

Your Name: _____

Date: _____

Rate your group on a 1 to 5 basis (**1 = poor; 2 = fair; 3 = good; 4 = very good; 5 = excellent**):

1. We worked cooperatively with all group members.	1	2	3	4	5
2. We accomplished what we set out to complete.	1	2	3	4	5
3. I am satisfied with our performance.	1	2	3	4	5
4. We used our group time efficiently without wasting or misusing time.	1	2	3	4	5
5. We all contributed fairly in the completion of this group task.	1	2	3	4	5

Personal assessment and observations:

1. Did you feel satisfied with your own participation in the project?

_____

2. Do you think that the project was fairly equal (that is, do you feel others in your group worked well and contributed fairly)?

_____

3. Do you think there are some ways your group could have improved and therefore produced a better finished product?

_____

4. Did you like doing a project like this, or do you honestly prefer to work on your own? (Please answer explaining why or why not.)

_____

Copied with the permission of the Teacher and Teacher-Librarian. Copyright 1993.